86-811-15377

SUMMARY REPORT
ON THE
LITHOGEOCHEMICAL AND MINERALOGICAL STUDY
OF THE
SURF INLET PROPERTY

MINING DIVISION: SKEENA
NTS: 103H/2W
LAT: 53°05.5'N
LONG: 128°53'W

CLAIMS: SADIE, PRINCESS ROYAL, DLS, BLUFF, GULCH, CASSIE, LAKE FR, INDEPENDENCE FR, CROWN GRANTS & HOMESTAKE, SUMMIT, BONANZA, ANACONDA, COUGAR 1 MINERAL CLAIMS

OWNERS: MATACHEWAN CONSOLIDATED MINES, LIMITED
PLACER DEVELOPMENT LTD.
COASTORO RESOURCES LTD.

OPERATORS: TRM ENGINEERING LTD.

WORK CARRIED OUT:
ORIGINAL SAMPLING: MAY-SEPT, 1981
ADDITIONAL SAMPLING: JULY 18, 1986
CURRENT ANALYSES & INTERPRETATION:
MARCH 2 TO SEPTEMBER 19, 1986
REPORTS COMPILED:
SEPTEMBER 2, 12, 26, 1986

AUTHORS:
J.F. HARRIS, Ph.D.
S.L. GARDINER, B.Sc.

DATE SUBMITTED:
DECEMBER 16, 1986

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SUMMARY

The Surf Inlet and Pugsley Mines are located near the head of Surf Inlet on Princess Royal Island. The mines produced a total of 382,351 ounces (11,891,116 g) of gold, 208,752 ounces (6,492,187 g) of silver and 6,314,341 pounds (6,314,341 kg) of copper during two periods of operation - from 1902 to 1926 and from 1934 to 1942.

Gold mineralization is localized along an extensive, complicated shear zone in diorite and gneiss. Gold is associated with pyrite in quartz-ankerite-sericite-sulphide veins. The age of the mineralization is about 80± 1 my.

In 1981 Cominco Ltd. conducted an extensive exploration program on the property. The work included mapping and sampling of surface showings and accessible underground workings and diamond drilling. The samples were analyzed for gold, silver and copper.

During the present study, pulps from 163 of the Cominco samples were retrieved and analyzed. An additional 7 samples were collected by TRM Engineering Ltd. in July, 1986. These 170 samples were analyzed for mercury and tellurium. Selected members of the suite were also analyzed by multi-element I.C.P. and/or for selenium, rubidium, carbon and gold.

One sample of altered mineralized rock was dated using the K-Ar method. The age of mineralization in the sample was 80 ± 1 my.

The purpose of this study is to determine whether consistent measurable compositional variations are present that can be used as indicators of gold mineralization.

Results indicate that molybdenum or lead may be indicative Surf Inlet Mine mineralization and enrichment in mercury and molybdenum is present in the Pugsley Mine ore zones.

INTRODUCTION

Past production from the Surf Inlet gold camp has come from two ore bodies, the Surf and the Pugsley, within a major shear zone. This structure, ranging from a few meters up to some 60m in width, is known to continue over 4,600m of strike. It is distinguished by varying degrees of alteration and shearing of the gneiss or diorite country rocks, accompanied by intermittent development of quartz veins. Gold mineralization tends to show a close correlation with abundance of pyrite but is typically erratic in its distribution.

Numerous vein quartz showings occur along the shear, some of them yielding encouraging gold values over narrow widths.

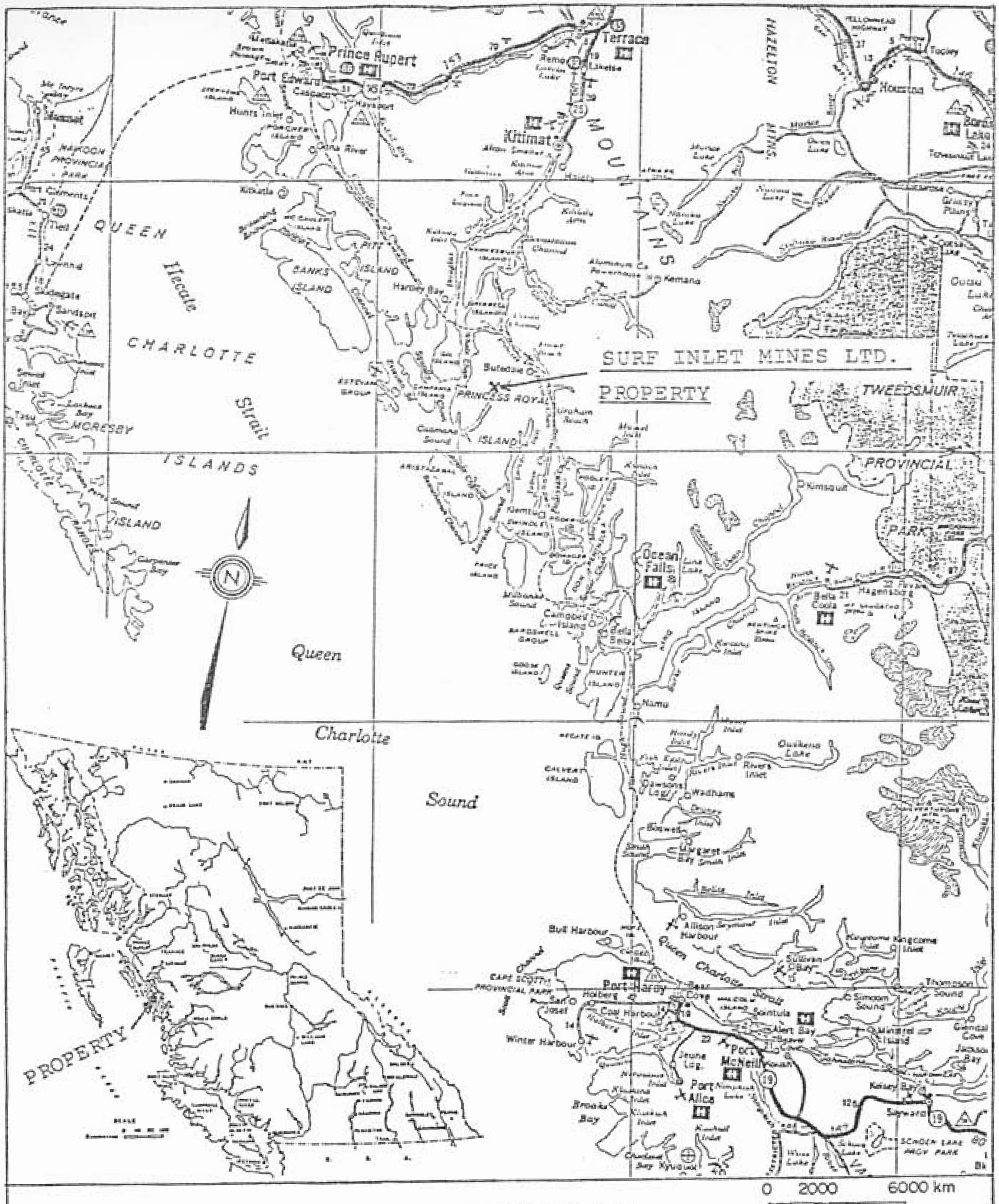
Although the shear is well exposed and accessible (within the limitations of the terrain) to surface examination and sampling, the highly variable nature of vein widths and grades, in both horizontal and vertical senses, makes conventional methods of evaluation (assaying of channel samples or core from scattered diamond drill holes) less than reliable.

LOCATION AND ACCESS

The Surf and Pugsley Mines are located near the head of Surf Inlet on Princess Royal Island approximately 160 kilometers southeast of the main supply base at Prince Rupert. The property is at 53° 05' N latitude and 128° 53' W longitude in mapsheet NTS 103 H/2W about 105 km southwest of Kitimat and 115 km northwest of Bella Bella. The nearest sizeable community is Hartley Bay, 44 km northeast. The docking facility at Butedale on the east coast of Princess Royal Island is a port of call for ships travelling the "Inside Passage" between Vancouver and Prince Rupert. Butedale is 16 km east of the Surf Inlet minesite. Ocean-going ships were able to call on the wharf at the head of Surf Inlet when the mines were in production. Currently the most active center of mineral exploration near Surf Inlet is Trader Resource Corp.'s gold project on Banks Island, 90 km to the northwest.

The Surf and Pugsley ore bodies, located on the north and south sides of Paradise Creek, are 11 km from the wharf and hydro-electric power site at the outlet of Cougar Lake. In the past, electric tramways and barges formed the supply link from the mines to tidewater. A tug and barge carrying fifteen 1-ton mine cars operated on the lake. At the mouth of Paradise Creek an overhead trolly electric railroad ran to the camp on an even grade. An incline from the ocean dock to the lake, a distance of 314 feet, and equipped with an electric hoist completed the transportation. Fixed wing aircraft with floats can land on Paradise Lake and a short foot-trail connects Paradise Lake to the minesites.

Topography in the area is very rugged with steep sided peaks rising to a maximum elevation of 1100 m ASL. The lowest level in the Pugsley Mine is the 1500 level which is 500 feet (152 m) below sea level. The lowest level on the Surf Mine is the 1400 level and is 275 feet (84 m) below sea level.



SURF INLET MINES LTD.

SURF INLET PROPERTY, B. C.

LOCATION MAP

FIGURE 1

Scale 1 : 2,400,000

PROPERTY AND TITLE

The property, as shown in Figure 2, consists of the following mineral tenure:

(a) Crown granted mineral claims (a total of 21 claims) optioned from owner, Matachewan Consolidated Mines, Limited

Bee	Lot 1915	Lake Fr.	Lot 32
Bench	35	Lakeview	229
Bluebell	2485	Marcia	2484
Bluff	34	Mountain Fr.	37
Cassie	228	Olive	227
DLS	31	Princess Royal	7
Excelsior	9	Sadie	8
Granite	1916	Sea Fr.	1914
Gulch	33	Twin Peaks	38
Independence Fr.	222	UTA Fr.	36
La Quivree	39		

(b) Mineral claims optioned from owner, Matachewan Consolidated Mines, Limited

Claims	Units	Rec. Numbers	Expiry Date
Bear 1	15	2221	April 16, 1987
Bear 2	15	2222	April 16, 1987
Bear 3	20	2223	April 16, 1987

Total = 50 units

(c) Mineral claims optioned from owner, Placer Development Ltd.

Claims	Units	Rec. Numbers	Expiry Date
Jen 1	20	2693	Nov. 27, 1986
Jen 2	20	2694	Nov. 27, 1986
Jen 3	10	2695	Nov. 27, 1986
Jen 4	20	2696	Nov. 27, 1986

Total = 70 units

PROPERTY AND TITLE (cont'd)

(d) Reverted Crown granted mineral claims (a total of 11 claims) optioned from owner, Placer Development Ltd.

Claims	Lot No.	Rec. Numbers	Expiry Date
Sheet Anchor Fr.	2105	1979	Jan. 14, 1987
Summit	226	1980	Jan. 14, 1987
Bonanza	224	1981	Jan. 14, 1987
Anaconda	223	1982	Jan. 14, 1987
Turner Fr.	221	1983	Jan. 14, 1987
Homestake	21	1984	Jan. 14, 1987
Seagull	2097	1985	Jan. 14, 1987
Little Tomy Fr.	2098	1986	Jan. 14, 1987
Brown Bear	2099	1987	Jan. 14, 1987
Sunlight Fr.	2103	1988	Jan. 14, 1987
Sea Lion Fr.	2104	1989	Jan. 14, 1987

(e) Mineral claims optioned from owner, Coastoro Resources Limited

Claims	Units	Rec. Numbers	Expiry Date
Cougar 1	6	2614	October 1, 1986
Cougar 2	2	2615	October 1, 1986

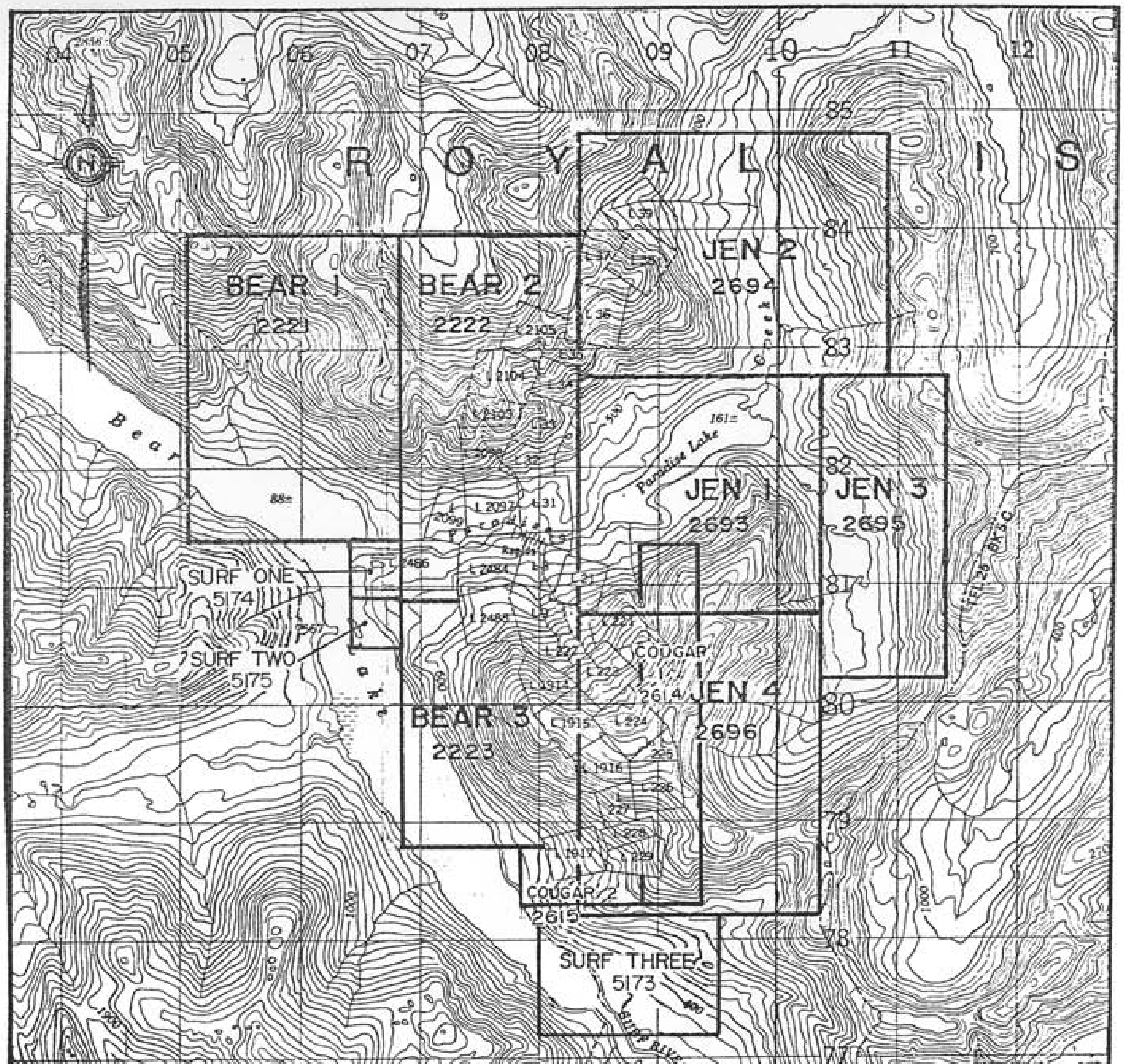
Total = 8 units

(f) Staked mineral claims

Claims	Units	Rec. Numbers	Expiry Date	Registered in Name of
Surf One	1	5174	Feb. 28, 1987	J.T. Shearer
Surf Two	1	5175	Feb. 28, 1987	J.T. Shearer
Surf Three	6	5173	Feb. 28, 1987	J.T. Shearer

Total 8 units

Mineral claims in sections (a) to (d) are held under option by T. van Wollen and M. McClaren. The Cougar claims (in section e) are held under option by Fleet Developments Ltd. All work on the claims was done for or by TRM Engineering Ltd.



SCALE 1: 50,000

1000 500 0 1000 2000 3000 M

CLAIM MAP

PROJECT: SURF INLET

ENG.: TRM ENGINEERING LTD.

FIGURE 2

HISTORY

The original discovery of gold in the Surf Inlet area was made in the late 1800's by tracing white quartz float from the bottom of the valley which enters Bear Lake from the east, up to where the vein outcrop on the north and south sides of the valley. The first claims were located in 1898 and are the oldest in the Skeena Mining Division exclusive of the Queen Charlotte Islands (McConnell, 1914).

Trial shipments of the ore were first made in 1902, and although these yielded excellent values in gold (about 5 oz per ton) and copper (about 3%), subsequent work was discouraging (Roddick, 1970). There is no record of the tonnage or value produced in this period and some doubt arose as to the average grade of the ore. Activity on the property remained at a low level until 1912 when a more vigorous development program began. The property was initially known as the "D.L.S. Group" and was owned by Surf Inlet Mines Limited who optioned them to the Belmont Canadian Mines Ltd. in March 1914. The Belmont Canadian Mines Ltd., a subsidiary of Tonopah-Belmont Development Company, developed and bought the property by reorganizing into the Belmont-Surf Inlet Mines Ltd. The property produced continuously from September 1, 1917 to June 30, 1926. Records show that 848,883 tons (385,156 tonnes) of ore were produced from which 322,297 oz (10,023,437 g) of gold, 176,734 oz (5,496,427 g) of silver and 5,244,772 pounds (2,379,030 kg) of copper were recovered (Dolmage, 1946).

The operators felt that there was no remaining ore when the mine closed in 1926.

In 1934, after the price of gold was raised, a new company was formed, Princess Royal Gold Mines by J.B. Woodworth, to acquire, rehabilitate and operate the property. This attempt failed and in 1935 the mine was again closed. The company was refinanced in 1936 and its name changed to Surf Inlet Consolidated Gold Mines Ltd. The old mill was originally rated at 300 tons per day but much of the machinery was removed prior to 1934 or had become obsolete. Milling resumed at 50 tons per day in 1936 and was gradually stepped up to a little over 100 tons per day by 1940 (Honsberger, 1973).

HISTORY (cont'd)

Overall, to the end of 1942 when the mine was closed by a scarcity of labour and general war conditions, total recorded production from the property amounted to 1,091,131 tons (495,068 tonnes), of which 169,886 tons (77,080 tonnes) came from the Pugsley and the remaining 921,245 tons (417,988 tonnes) from the Surf ore body. From this ore were recovered 382,351 ounces (11,891,116 g) of gold, 208,752 ounces (6,492,187 g) of silver and 6,314,341 pounds (2,864,185 kg) of copper (Dolmage, 1946).

Cominco Ltd., in joint venture with Placer Development Ltd., conducted and extensive exploration program on the property in 1981. The work included geological mapping and geochemical sampling of the surface showings and underground workings, sampling of the Surf Inlet mine dumps and surface diamond drilling.

The current program was initiated in 1975. Preliminary work included sampling of mine dumps and mill tailings for metallurgical testing, topographic mapping and the lithogeochemical and mineralogical study described here.

GEOLOGY

Gold mineralization is localized along an extensive, complicated shear system that has developed in intrusive and gneissic volcanics and metasediments of the Coast Plutonic Complex (see Figure 3). Gold associated with pyrite occurs in quartz-ankerite-sericite-sulfide veins. Distribution of ore shoots within the veins depend on late stage fault adjustments and flexures during which veins along certain shear surfaces and zones were fractured and mineralized.

A sample of the mineralized, altered intrusive rock from DDH81-2 was analyzed by K-Ar method in August, 1986. The age of mineralization was determined as 80 ± 1 my (see Appendix VII).

GEOCHEMISTRY

Objectives

The purpose of the study currently in progress is to investigate the possible existence within the shear zone of broader, more consistently measurable compositional variations which could be used as indicators of proximity to additional centres of significant Au mineralization comparable with the Surf and Pugsley.

Several cases of lithogeochemical studies of gold deposits exist in the literature, but these are mostly more regional in scale - investigating broad halos in the (more or less unaltered) hosting lithologies, rather than variations within a confined structural zone.

Some elements which have been reported as useful in the halo-forming context are Te, Hg, As, Sb, Ag, Mo, Pb, Rb and Co_2. Naturally, the elements exhibiting the best responses differ from camp to camp.

The objectives of the present study are to find out:

a) which mineralization or alteration-related elements show interesting levels of variation within the Surf Inlet shear zone;

b) whether any elements showing enrichment in the actual mineralized veins also show a more dispersed enrichment in the adjacent altered shear material, providing a halo or enlarged target for sampling;

c) what scale of variation is exhibited by the elements of interest, and how the shear must be sampled in order to detect the patterns sought;

d) to establish the geochemical profiles characteristic of veins and wall rocks at the two known productive locations in the shear, Pugsley and Surf. This would provide a datum against which corresponding geochemical data from areas of unknown economic potential within the shear system could be compared and rated in terms of degree of similarity (and, hence, favourability for sub-surface exploration by drilling).

GEOCHEMISTRY

Work Done

The study has been carried out in stages using sample material collected by Cominco Ltd. in its 1981 program in the area.

Initial work, to establish feasibility of the approach, was done on a small suite of 16 samples, including 2 from the Pugsley workings. These were analyzed for Al, Ag, As, Ba, Be, Bi, Ca, Cd, Co, Cr, Cu, Fe, Ga, K, La, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Sr, Ti, Tl, U, V, W and Zn by semi-quantitative ICP/AA analysis, and for Hg, Te, Rb, Se and total C by specific methods. Data on Au, Ag and Cu was already on file.

Trace elements found to show substantial variation and to show maximum potential as discriminators were Au, Ag, Cu, Te and Hg. Some indication was obtained that Hg and Te (and possibly Cu) show halo-forming characteristics. Lesser variation was found in Ba, Mn, Sr, C and Mo. The remaining elements analyzed gave either low, flat responses (with no difference between areas) or are major constituents for which the data is not quantitative and which are generally unsuited to the present study in that they can be expected to vary principally by virtue of rock type rather than mineralizing processes.

Based on this preliminary work, an additional suite of 53 samples was analyzed for Hg and Te which, together with Au, Ag and Cu (existing data), constitute the elements judged to be of maximum promise in this study.

Compilation of these data provided indications that the ore-related locations (Pugsley 900 level and the adjacent Homestake Adit) could be distinguished from the other 14 shear zone showings and drill hole intersections represented. Discriminating factors were enrichment in the ratios of Hg/Au and Cu/Au in both mineralized and unmineralized samples and of Te/Au in unmineralized material.

Some of the other localities represented showed comparable values in some, but not all, of the above ratios.

GEOCHEMISTRY (cont'd)

Work Done (cont'd)

In order to confirm and expand these findings, a further suite of 93 samples was analyzed for Te and Hg. This represents the bulk of the available samples from the 1981 Cominco program and, together with the 68 samples previously analyzed, provides a coverage of betwen 2 and 10 samples (of vein material and/or adjacent country rock) from each of 22 different showings (surface exposures of the shear) and 10 diamond drill holes.

In addition, a sub-set of 50 samples was run for 30 element ICP analysis to obtain better information on the distribution and discriminating potential of other trace elements. Mo and Pb were found to show most promise in this respect.

The most recent phase of the study was the analysis of 7 samples from the Surf Mine and 2 more from the Pugsley.

Presentation of Data

The data, based on each phase of the work, is presented in a series of progress reports which are appended to this summary and briefly described below.

Report 1
Sixty-nine samples were analyzed for mercury and tellurium and these results were correlated with 1981 data on gold, silver and copper. Sixteen of the samples were also run for multi-element ICP and selenium, rubidium and carbon.

Report 2
An additional 93 samples were analyzed for mercury and tellurium and correlated with gold, silver and copper data from 1981. Ratios of mercury to gold and copper to gold are discussed.

Report 3
Multi-element ICP analyses were done on 50 samples. Mercury, copper and molybdenum are identified as possible discriminator elements for Pugsley type mineralization and enhanced values of copper, molybdenum and lead are present in Surf Mine ore zones and may be indicative of that mineralization.

GEOCHEMISTRY (cont'd)

Presentation of Data (cont'd)

Report 4

Nine samples were collected on the property in July, 1986. Eight samples of the samples represent Surf Mine mineralization and one was collected from the Pugsley Mine. The samples were analyzed for gold, silver, copper, mercury, tellurium and by multi-element ICP. The results are discussed.

Report 5

Seven of the samples collected in 1986 were prepared as polished thin sections and examined under reflected and transmitted light. The possible mode of occurrence of gold for the Surf Inlet property is discussed.

The most significant results - gold, silver, copper, mercury, tellurium, lead and molybdenum - are listed in Appendix VI(a) and on the sample location plans (Figures 3 to 35) in the map section. The maps were acquired from Cominco Ltd. and have been revised to include the 1986 data.

Results

It was concluded from the above work that the known productive situations show distinctive levels in various combinations of the elements (or element ratios) Mo, Pb, Hg/Au and Cu/Au.

A compilation of the relevant data (in the form of mean values for all samples analyzed from each area) is given in Table 1. The data are sub-divided into high Au (generally vein material) and low Au (generally wall rocks) by an arbitrary cut-off at 1,000 ppb Au.

Salient features are the elevated Mo contents and enrichment of Hg with respect to Au in both mineralized and unmineralized material at the Pugsley Mine (900 level). Hg (though not Mo) also shows a significant degree of enrichment in the samples fro the Homestake Adit, which represents Pugsley mineralization at a higher level.

Table 1. MEAN VALUES OF POTENTIAL DISCRIMINANT FACTORS

Area	High Au						Low Au					
	Number of Samples	Hg/Au	Cu/Au	Number of Samples	Mo	Pb	Number of Samples	Hg/Au	Cu/Au	Number of Samples	Mo	Pb
A Ore related												
Pugsley zone:												
Pugsley 900 level	5	0.56	>2035	3	29	3	7	8.4	>8073	3	19	2
Homestake adit	5	0.11	218	2	6	<2	4	5.8	318	2	<1	2
Surf zone:												
Surf 100 level	7	0.01	130	7	117	3	-	-	-	-	-	-
Bluff	3	0.02	7	1	4	8	2	0.5	2600	1	1	10
Bluff (348 m.)	1	0.06	6907	1	7	28	2	0.2	3307	1	<1	28
Undifferentiated:												
West Dump	4	<0.01	228	1	1	26	3	0.1	1211	1	3	300
East Dump	3	0.02	195	1	93	18	3	0.2	593	1	3	20
Paradise Ck Dump	3	0.01	398	1	13	4	3	0.2	1177	1	13	2
B Other												
Sadies Ck 195 m	1	0.01	21	-	-	-	2	1.3	554	-	-	-
165 m	1	<0.01	4	-	-	-	2	0.2	281	-	-	-
145 m	2	<0.01	227	-	-	-	2	0.1	2771	-	-	-
125 m	1	0.01	270	1	2	2	2	0.7	1075	2	<1	2
105 m	1	0.02	862	1	<1	2	3	0.2	1856	1	<1	4
95 m	1	0.02	976	1	2	<2	3	0.1	2286	1	<1	2
Anaconda	-	-	-	-	-	-	3	1.1	103	2	12	<2
Diabase	1	0.02	6	1	35	2	3	0.5	1059	1	1	<2
Bonanza	2	0.30	1663	1	4	<2	3	0.3	720	2	<1	<2

Table 1 cont.

Area	High Au Number of Samples	Hg/Au	Cu/Au	Number of Samples	Mo	Pb	Low Au Number of Samples	Hg/Au	Cu/Au	Number of Samples	Mo	Pb
Ridge A	-	-	-	-	-	-	1	>3.0	>2300	-	-	-
Ridge B	-	-	-	-	-	-	4	0.2	262	2	<1	4
Summit	2	0.05	20	1	1	<2	2	0.2	145	1	<1	<2
Cassie	3	0.03	<1	1	2	<2	3	0.2	365	2	<1	<2
Independence A	-	-	-	-	-	-	3	>0.5	>267	-	-	-
B	-	-	-	-	-	-	1	0.1	20326	-	-	-
C	-	-	-	-	-	-	3	0.4	515	-	-	-
Shear E of 81-1	1	0.05	44	-	-	-	2	0.2	261	-	-	-
Shear E of 81-2	-	-	-	-	-	-	2	>2.0	>1750	-	-	-
DDH 81-1	-	-	-	-	-	-	4	2.3	2963	2	2	5
81-2	2	0.05	1	2	3	<2	7	0.3	20	7	<1	2
81-3	-	-	-	-	-	-	5	0.5	1692	2	<1	6
81-4	2	0.01	381	2	2	2	4	1.8	3182	1	<1	<2
81-5	1	0.01	152	1	1	2	4	0.6	1500	2	<1	3
81-6	1	0.01	3	1	4	6	5	0.2	216	1	<1	4
81-7	1	0.01	2	1	1	<2	6	0.2	137	1	1	4
81-8	-	-	-	-	-	-	6	0.6	1210	2	5	7
81-9	-	-	-	-	-	-	3	>5.7	>4065	-	-	-
81-10	-	-	-	-	-	-	5	>9.4	>49280	-	-	-

Note: ratios prefixed > result from Au values being below the limit of detection (<10 ppb).

GEOCHEMISTRY (cont'd)

Results (cont'd)

The samples of mineralized material from the Surf Mine (100 level) show a strong enrichment in Mo but, surprisingly, this feature is barely perceptible in the samples from the Bluff showings (which represent the surface expression of the Surf Mine mineralization). On the other hand, the Bluff samples show a significant enrichment in Pb which is not apparent in the 100 level samples. None of the Surf material shows the elevated Hg/Au seen in the Pugsley.

The three dumps, which presumably contain material from either or both of the underground mining operations, in no case show the enrichment in Hg characteristic of the Pugsley. The East and Paradise Creek dumps (but no the West Dump) are high in Mo, whilst the East and West dumps (but not the Paradise Creek) are enriched in Pb. The West Dump thus appears similar to the near surface (Bluff) zone of the Surf mineralization, whilst the East and Paradise Creek dumps more resemble the Surf 100 level.

Note that the study does not, as yet, include examples of unmineralized material from the Surf 100 level.

The Pugsley samples show very high Cu/Au ratios. This is also the case with the unmineralized material from both Bluff showings and the mineralized samples from the Bluff (348m). However, the samples from the Surf 100 level do not show this feature.

Cu enrichment (relative to Au) appears to be of relatively common occurence in the low-Au samples from many of the areas tested (see Table 1) and hence may not be a valid discriminant in that context.

Conclusions

Results of the study to date suggest that enrichment in Mo and/or Pb may be an indicator of Surf Mine-type mineralization, whilst enrichment in Hg and Mo may be indicative of Pugsley-type mineralization.

GEOCHEMISTRY (cont'd)

Conclusions (cont'd)

This conclusion must, however, be considered tentative as it is based on averages from sample populations which are still too small to be statistically reliable; moreover the variances of data within samples groups are often high.

Additional sampling and analysis is required in order to substantiate these preliminary indications. In particular, the apparent variations with depth in the known productive areas should be further investigated.

The work to date is insufficient to justify the rating of other areas in terms of the suggested discriminants. The values in Table 1 are, in almost all cases, based on far too few samples (often only one or two) to be an adequate representation; however, the elevated Hg and Cu/Au found in the two high-Au samples from the Bonanza showing are interesting and tend to encourage the early acquisition and testing of additional samples from that location.

STATEMENT OF QUALIFICATIONS

I, Jeffrey Frederick Harris, of North Vancouver, British Columbia, do hereby certify that:

1. I am a consulting geologist with an office at 354 Ellis Street, North Vancouver, British Columbia.

2. I am a graduate of the Royal School of Mines, London (B.Sc. in Mining Geology, 1956) and of the Australian National University, Canberra (Ph.D., 1965).

3. I have practiced my profession of geologist since 1956, being employed for 6 years by the Geological Survey of Tanganyika, and for 17 years by Cominco Ltd. I have been an independent consultant since 1983.

4. I am a Fellow in good standing of the Geological Association of Canada.

Dated at Vancouver, British Columbia, this 23rd day of September, 1986.

STATEMENT OF QUALIFICATIONS

I, Sharon L. Gardiner, of the District of North Vancouver, in the Province of British Columbia, do hereby certify:

1. I graduated with a Bachelor of Science, Honours Degree in Earth Sciences (cooperative program) from the University of Waterloo in May, 1979.

2. I have practiced my profession continuously since graduation.

3. I am a Fellow of the Geological Association of Canada.

4. I compiled this summary using reports written by J. Shearer, G. Hawthorn and J. Harris.

Dated at Vancouver this 30th day of September, 1986.

COST STATEMENT

Consulting Fees	
- J.F. Harris, 14 days @ $350/day	$ 4,973.00
Sample Acquisition, Data Interpretation, Examination and Report	
Analytical Costs:	
162 samples for Hg, Te @ $9.52/sample	1,066.50
19 samples for Se, Rb, C @ $15/sample	285.00
9 samples for Hg, Te, Au @ $16/sample	144.00
76 samples 30 element ICP @ $6.50/sample	531.75
3 samples fire assay for Au @ $7.75/sample	23.25
1 sample whole rock analysis, K-Ar date	398.00
Polished Sections, Prep & Mounting	
7 samples @ $21.43/sample	150.00
Report Compilation,	
S. Gardiner - 3 days @ $115/day	345.00
Drafting, 5 hrs @ $15/hr	75.00
Map Reproduction, Typing	275.00
	$ 8,266.50

Table II

ALLOCATION OF 1986 ANALYSES TO CLAIMS

Showing	Location	# of Samples	Date Sampled	Appendix #	1986 Analyses Hg,Te	Rb,Se,C	ICP	Assay
Pugsley	Sadie CG	6	1981	I	X		X	
907 Drift		4	1981	II	X			
		1	1986	III	X	X	X	X
Veins @ mouth of Sadie's Creek	Princess Royal CG	1	1986	III	X	X	X	X
Homestake	Homestake	6	1981	I	X	X	X	
Adit	Homestake	3	1981	II	X		X	
Sadie's Creek	Sadie CG	8	1981	I		X		
		13	1981	II	X		X (7)	
Bluff 200L Adit A	Bluff Gulch CG	2	1981	I		X	4	
Bluff 200L Adit B	Bluff Gulch CG	3	1981	II	X	X	X	X
Bluff 348m Elev	Gulch CG	3	1981	II	X			
Bluff 200L Dump	Bluff CG	6	1986	III	X	X	X	X
Surf Mine 200L Dump	Bluff CG							
Cassie	Cassie CG	6	1981	I	X	X	3	
Summit	Summit	3	1981	I	X	X	2	
Bonanza	Bonanza	5	1981	I	X	X	3	
Diabase	Bonanza	4	1981	I	X	X	2	
Surf Dumps (E & W)	Lake FR, DLS	9	1981	I	X	X	2	
Paradise Creek	Princess Royal CG	10	1981	II	X		4	

Table II

ALLOCATION OF 1986 ANALYSES TO CLAIMS

Showing	Location	# of Samples	Date Sampled	Appendix #	1986 Analyses Hg,Te	Rb,Se,C	ICP	Assay
Surf 550 Level Dump	Lake FR CG	1	1986	II, III	X	X	X	X
Anaconda	Anaconda	3	1981	II	X		4	
Independence A	Excelsior CG	3	1981	II	X			
Independence B	Excelsior CG	1	1981	II	X			
Independence C	Excelsior CG	3	1981	II	X			
Ridge Shear A	Bonanza	1	1981	II	X			
Ridge Shear B	Cougar 1	4	1981	II	X		2	
HW Shear East of DDH81-1	Anaconda	3	1981	II	X			
HW Shear East of DDH81-2	Anaconda	2	1981	II	X			
DDH81-1	Anaconda	4	1981	II	X		2	
DDH81-2	Anaconda	9	1981	I			9	
DDH81-2	Anaconda	1	1986	VI			WR	
DDH81-3	Independence FR CG	5	1981	II	X		2	
DDH81-4	Excelsior CG	4	1981	I			3	
DDH81-4	Excelsior CG	2	1981	II	X			
DDH81-5	Excelsior CG	5	1981	II	X		3	
DDH81-6	Sadie CG	6	1981	II	X		2	
DDH81-7	Sadie CG	7	1981	I			2	
DDH81-8	Seagull	6	1981	II	X		2	
DDH81-9	DLS CG	3	1981	II	X			
DDH81-10	Lake FR CG	5	1981	II	X			

APPENDIX I

PRELIMINARY REPORT ON THE LITHOGEOCHEMISTRY OF THE SURF INLET SHEAR ZONE

J.F. HARRIS

CONTENTS

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PRELIMINARY REPORT ON THE LITHOGEOCHEMISTRY OF THE SURF INLET SHEAR ZONE

J.F. HARRIS

Introduction

Past production from the Surf Inlet gold camp has come from two ore bodies, the Surf and the Pugsley, within a major shear zone. This structure, ranging from a few metres up to some 60 m. in width, is known to continue over several miles of strike. It is distinguished by varying degrees of alteration and shearing of the gneiss or diorite country rocks, accompanied by intermittent development of quartz veins. Au mineralization tends to show a close correlation with abundance of pyrite but is typically erratic in its distribution.

Numerous vein quartz showings occur along the shear, some of them yielding encouraging Au values over narrow widths.

Although the shear is well exposed and accessible (within the limitations of the terrain) to surface examination and sampling, the highly variable nature of vein widths and grades in both horizontal and vertical senses, makes conventional methods of evaluation (assaying of channel samples or core from scattered diamond drill holes) less than reliable.

Objectives

The purpose of the study currently in progress is to investigate the possible existence within the shear zone of broader, more consistently measurable compositional variations which could be used as indicators of proximity to additional centres of significant Au mineralization comparable with the Surf and Pugsley.

Several cases of lithogeochemical studies of gold deposits exist in the literature (see References, p.6), but these are mostly more regional in scale - investigating broad halos in the (more or less unaltered) hosting lithologies, rather than variations within a confined structural zone.

Some elements which have been reported as useful in the halo-forming context are Te, Hg, As, Sb, Ag, Mo, Pb, Rb and CO_2. Naturally the elements exhibiting the best responses differ from camp to camp.

The objectives of the present study are to find out:

a) which mineralization or alteration-related elements show interesting levels of variation within the Surf Inlet shear zone

b) whether any elements showing enrichment in the actual mineralized veins also show a more dispersed enrichment in the adjacent altered/shear zone material.

c) what scale of variation is exhibited by the elements of interest, and how the shear must be sampled in order to detect the patterns sought.

Work done

As a first step (directed towards objective (a) above) a small suite of 16 samples was analyzed for 35 elements. These samples are part of a fairly extensive suite collected from surface showings, underground workings, diamond drill holes and ore dumps by Cominco Ltd. during their 1981 programme of exploration on the property, and kindly made available for use in this study.

Analytical results are tabulated in Appendix A.

Trace elements found to show substantial variation are Au, Ag, Cu, Hg and Te. Somewhat lesser variation is shown by Ba, Mn, Sr, C and, possibly, Mo.

Trace elements showing notably flat responses (in some cases below analytical detection limit) are As, Be, Bi, Cd, Ga, La, Pb, Sb, Tl U, W, Zn, Rb and Se.

Major elements are considered to be generally inapplicable to this study in that their distribution is likely to be more strongly influenced by lithological variations in the rocks traversed by the shear than by mineralization-related processes. Likewise such trace elements as Co, Ni and Cr are downgraded because of their likely dependence on variations in the proportions of primary mafic minerals.

Of the five elements showing the most initial promise (Au, Ag, Cu, Hg and Te), data for the first three already exist for all samples by virtue of the Cominco work. Analyses for Hg and Te have been done on an additional suite of 53 more samples. These include Au-bearing veins, barren veins, and altered wall rocks. Together with the corresponding data from the initial 16 samples, these results form the basis for the preliminary findings discussed in the following section.

Discussion

The frequency distribution of concentrations of all the five elements under consideration is strongly logarithmic in character, showing ranges of several orders of magnitude.

As a means of looking at inter-relationships in a semi-quantitative sense, a three-fold classification of concentrations was made for each element. The cut-offs adopted are as follows:

	Low	Medium	High
Au (ppb)	<10 - 290	300 - 3,000	>3,000
Ag (ppm)	<0.4 - 1.9	2.0 - 20	>20
Cu (ppm)	2 - 99	100 - 1,000	>1,000
Hg (ppb)	10 - 90	100 - 500	>500
Te (ppm)	0.05 - 0.45	0.5 - 5	>5

The above provides a reasonably even division of the 69 samples, which are distributed as follows:

Number of Samples

	Low	Medium	High
Au	37	11	21
Ag	45	16	8
Cu	42	15	12
Hg	39	18	12
Te	26	19	24

The following diagrams show the degree of correlation of the various elements with Au, in terms of the numbers of samples in which, for example, high, medium and low Te values are respectively associated with high, medium and low Au.

Te \ Au	Low	Med	High
High	2	1	21
Med.	9	10	-
Low	26	-	-

Hg \ Au	Low	Med	High
High	4	1	8
Med.	5	2	10
Low	27	9	3

Ag \ Au	Low	Med	High
High	-	1	7
Med.	1	3	12
Low	36	7	2

Cu \ Au	Low	Med	High
High	1	3	8
Med.	5	3	7
Low	31	5	6

General conclusions to be drawn from the above are that all four elements show strong to moderate positive correlations with Au content. Details of the pattern differ somewhat. Low Au values can be seen to have associated high Hg and medium to high Te and Cu in a significant percentage of cases; this is essentially never the case with Ag.

On the other hand, high Au values never show associated low or even medium Te values, but frequently coincide with low and medium Cu values. Ag and Hg show intermediate features in this respect.

In this study we are looking not for an element which correlates perfectly with Au (and hence presents the same high variance and difficulties of sampling), but one which, whilst being genetically associated with the mineralizing process, shows a significant degree of dispersion into the shear zone rocks around and above the immediate Au-bearing veins, or sections of veins. Those elements in which the association diagrams show an overlap of high values from the high Au into the low Au samples are believed to show promise in this respect.

Hg shows the most favourable distribution, followed by Te and, in turn, Cu. Ag appears to completely lack dispersive characteristics.

It is possible that Au itself also offers some possibilities as a pathfinder. Although it shows a highly erratic (segregated) distribution on the basis of conventional assays, there are grounds for expecting some dispersion in the very low trace range. This may well be obscured in the existing Cominco data (rock geochemical determinations by acid digestion/solvent extraction/atomic absorption to a nominal detection limit of 10 ppb) in which discrimination in the range 0 - 30 ppb is likely to be poor. Currently available geochemical techniques (fire assay/neutron activation or fire assay/AA) yield a detection limit of 1 ppb and should be better capable of displaying low-level halos of Au distribution. These may be manifested by significantly higher abundances of 10 - 30 ppb concentrations compared with 0 - 10 ppb concentrations in certain sections of the shear.

Although the sample suite so far studied is by no means a balancedrepresentation of the various showings, shear intersections, etc. and the mineralized veins and associated shear zone material which jointly compose them, it may nevertheless prove intructive to see how the present data stand up in use as a lithogeochemical guide.

For this purpose it is necessary to rate the various groups of samples in terms of how close each comes to representing the situation we hope to be able to characterize i.e. a portion of the shear zone which contains, or is closely proximal to, a major concentration of mineralization.

The samples from the underground workings in the Pugsley Mine must presumably be rated as most closely representing the target 'productive' situation. The samples from the Homestake adit, being spatially related to auriferous veins in the East Shear system in the vicinity of the Pugsley, perhaps rate close to them in favourability. The diamond drill hole, 81-4, intersects the shear only a few hundred feet along strike from the southern limits of the Pugsley zone, so it may exemplify an 'adjacent to productive' situation.

Of other locations represented in the suite, the Sadie's showings are relatively close to the northern end of the Pugsley, and the Bluff showing is in the general vicinity of the Surf ore body: however, neither may be sufficiently close to reflect the influence of the respective ore zones.

The remaining locations (Cassie, Bonanza, Diabase,Summit, DDH-2 and DDH-7) are not close to any known ore concentrations and, provisionally, can be considered as less favourable situations.

Parameters used in comparing the various locations are relative enrichment of Hg, Te, Ag and Cu in mineralized material (arbitrarily defined, for this purpose, as samples containing >1,000 ppb Au) and the relative enrichment of the same elements in unmineralized vein and shear zone material (samples containing <1,000 ppb Au). The relative enrichment factors are simply the ratios of average element contents (in ppb) vs average Au contents (in ppb) for the 'mineralized' and 'unmineralized' samples from each location. Because of the preliminary status of the study, and the rather sketchy sample coverage, these are, in some cases, averages of one!

The calculated factors are compiled in Table 1.

The enrichment factors which best distinguish the two ore-related locations (Pugsley and Homestake) from the others appear to be Hg/Au and Cu/Au, in both

TABLE 1. COMPARISON OF ENRICHMENT FACTORS

Location	Category	Enrichment factors: Mineralized samples				Enrichment factors: Unmineralized samples			
		Hg/Au	Te/Au	Ag/Au	Cu/Au	Hg/Au	Te/Au	Ag/Au	Cu/Au
u/g Pugsley	Ore related	0.5	1.4	2.6	2,052	11.1	3.1	3.4	8,983
u/g Homestake	"	0.3	2.8	0.6	411	8.6	10.5	1.5	446
DDH-81-4	Near to ore?	0.02	1.7	1.0	381	1.2	4.4	12.5	2,937
Sadies	"	0.01	0.7	0.4	166	0.4	6.3	1.9	2,298
Bluff	"	0.02	1.0	3.2	8	0.3	6.8	2.9	321
Cassie	Unknown	0.03	0.7	1.5	1	0.2	3.6	3.4	365
Bonanza	"	0.3	2.7	7.3	1,663	0.3	75.8	6.8	720
Diabase	"	0.02	3.4	5.5	6	0.5	5.8	17.3	1,059
Summit	"	0.04	2.2	2.2	23	0.2	3.6	2.2	145
DDH-81-2	"	0.05	2.7	7.4	1	0.3	4.8	15.4	20
DDH-81-7	"	0.01	0.7	0.2	2	0.2	1.8	1.0	137
Dumps	"	0.01	1.0	0.4	268	0.2	3.4	1.5	229

mineralized and unmineralized material. Te/Au in unmineralized samples is also perceptibly higher in these areas.

The mean values of these factors for the two ore-related locations are:

Hg/Au (min)	0.4
Hg/Au (unmin)	9.8
Cu/Au (min)	1,231
Cu/Au (unmin)	4,714
Te/Au (unmin)	6.8

The locations classed as possibly 'near to ore' show no tendency for elevated values in Hg/Au (min), though DDH-81-4 is somewhat elevated in Hg/Au (unmin). It also shows values of Cu/Au (min and unmin) resembling those of the ore-related areas.

Sadie's shows a high score in Cu (unmin) and a marginal one in Cu/Au (min), but is not distinctive in terms of Hg/Au. Sadie's and Bluff both show relatively high Te/Au (unmin).

Among the locations of unknown potential, the Bonanza stands out as having values of Hg/Au (min), Cu/Au (min) and Cu/Au (unmin) similar to those of the ore-related examples. It also shows a uniquely high score in Te/Au (unmin).

The Diabase showing has high Cu/Au (unmin) and somewhat high Te/Au (unmin).

In summary, based on scores in the five factors which best distinguish the known ore-related areas, the three possible near-ore situations all show partial ore-related characteristics.

Among the unknowns, the Bonanza and, to a lesser degree, the Diabase show partially favourable lithogeochemical features.

The failure of the Dump samples to show any resemblance to the ore-related group is somewhat puzzling. One assumes that these represent material which came from old workings and should hence exhibit strongly the chemical characteristics tentatively ascribed as 'favourable'. It is possible that weathering and oxidation affecting the broken rock over a period of several years has resulted in depletion of the mobile elements Hg and Te.

Recommendations

Results of the study to date are promising. In order to confirm (or modify) the tentative findings, further work is required.

1. The second group (of 53 samples) should be run for multi-element ICP analysis to ascertain whether any other elements (notably Ba, Mn, Mo and Sr) show potential for discriminating ore-related environments within the shear. Au analysis to 1 ppb detection limit should also be considered, to check out the low-level dispersion hypothesis.

2. Following this, all remaining shear-zone samples from the Cominco programme (estimated at about 100) should be analyzed for Hg, Te and any other element(s) found to exhibit discriminatory potential.

The resultant data, combined with that already acquired, will permit a more reliable and refined derivation of lithogeochemical discriminants.

3. Given success in stage 2 (above), plans for the collection of new samples and a systematic evaluation of the Surf Inlet Shear Zone can be made.

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APPENDIX

LIST OF SAMPLES AND ANALYTICAL RESULTS

LIST OF SAMPLES

Sample No.	Lab. No.	Location	Description
SR 81-152	R81-12486	Pugsley 907 drive, S.	2.5m. channel, vein and shear
153	12487	" "	2.0m. " " "
158	12492	" " C.	3.0m. " , shear with quartz
163	12497	" "	3.0m. " , vein and shear
165	12499	" " N.	2.0m. " , vein and shear
168	12502	" "	3.0m. " , quartz vein
SR 81-103	R81-10203	Homestake adit, N.	1m. channel, HW to quartz
105	10205	" "	" , FW to quartz
108	10208	" " C.	" , vein and shear
109	10209	" "	" , shear
110	10210	" " S.	" , shear with quartz
111	10211	" "	" , shear with sulfides
SR 81- 79	R81- 9976	Sadie's Ck. 195m.	Shear, HW to vein
80	9977	" "	Quartz vein
81	9978	" "	Shear, FW to vein
85	9982	" 145m.	Shear, HW to vein
86	9983	" "	Quartz vein
87	9984	" "	Shear, FW to vein
89	9986	" 125m.	Shear, HW to vein
91	9988	" "	Shear, FW to vein
SR 81- 71	R81- 9882	Bluff, 200L Adit	Shear, HW to quartz vein
72	9883	" "	Quartz vein
SR 81- 17	R81- 8523	Cassie Showing	Grabs from ore dump
18	8524	"	Shear, HW to upper quartz vein
19	8525	"	Upper quartz vein
20	8526	"	Shear between veins
21	8527	"	Lower quartz vein
22	8528	"	Shear, FW to lower quartz vein
SR 81- 28	R81- 9431	Summit Showing	Shear, HW to quartz vein
29A	9432	"	Quartz vein
30	9434	"	Shear, FW to quartz vein
SR 81- 23	R81- 8617	Bonanza Showing	Shear, HW to quartz vein
24	8618	"	Upper quartz vein
25	8619	"	Shear between veins
26	8620	"	Lower quartz vein
27	8621	"	Shear, FW to lower quartz vein
SR 81- 31	R81- 9435	Diabase Showing	Shear, HW to quartz vein
32	9436	"	Quartz vein
33	9437	"	Shear FW to quartz vein
34	9438	"	Diabase dyke cutting shear

List of Samples cont.

SR 81-125	R81-10605	Surf Dumps,	W. Dump	Composite grab
129	10609	"	"	"
130	10610	"	"	"
142	10622	"	"	"
145	10625	"	E. Dump	"
148	10628	"	"	"
118	10218	"	Paradise Ck	"
119	10219	"	"	"
121	10221	"	"	"
	R81- 8555	DDH 81-2	116.0 - 116.6	Shear zone
	8556	"	116.6 - 117.6	"
	8557	"	117.6 - 118.6	"
	8558	"	118.6 - 119.6	"
	8559	"	119.6 - 120.6	"
	8560	"	120.6 - 121.6	"
	8561	"	121.6 - 122.6	"
	8562	"	122.6 - 123.2	"
	8563	"	123.2 - 124.0	"
	R81- 9852	DDH 81-4	117.9 - 118.9	Shear zone
	9853		116.9 - 117.9	"
	9854		116.3 - 116.9	"
	9855		115.3 - 116.3	"
	R81-12507	DDH 81-7	58.6 - 60.8	Shear zone
	12508	"	60.1 - 60.8	"
	12510	"	61.4 - 61.5	"
	12511	"	61.5 - 62.6	"
	12512	"	62.6 - 63.8	"
	12514	"	64.8 - 65.8	"
	12515	"	65.8 - 66.8	"

ANALYTICAL RESULTS

Location	Lab. No	Chemex, 1986		Cominco, 1981		
		Hg (ppb)	Te (ppm)	Au (ppb)	Ag (ppm)	Cu (ppm)
Pugsley u/g						
	12486	3,400	18.00	14,000	29.9	2,340
	12499	5,600	3.80	2,030	1.3	1,586
	12502	320	1.55	1,140	14.0	31,300
	Means (hi Au)	3,106	7.80	5,723	15.1	11,742
	12487	4,000	0.75	124	0.4	168
	12492	1,420	0.55	124	1.8	6,100
	12497	2,400	0.85	456	0.4	65
	Means (lo Au)	2,607	0.72	235	0.87	2,111
Homestake u/g						
	10208	3,000	30.00	10,500	3.6	1,890
	10210	1,640	13.00	4,630	5.8	5,150
	10211	820	9.50	3,860	2.3	763
	Means (hi Au)	1,820	17.50	6,330	3.9	2,601
	10203	240	1.25	160	<0.4	81
	10205	100	0.55	140	<0.4	38
	10209	3,000	2.30	90	<0.4	56
	Means (lo Au)	1,113	1.37	130	<0.4	58
Cassie	8523	1,760	22.00	63,000	93.2	26
	8525	120	13.00	4,300	7.4	11
	8527	100	13.50	6,000	11.1	11
	Means (hi Au)	660	16.20	24,330	37.2	16
	8524	20	0.40	110	<0.4	138
	8526	40	1.10	300	0.8	2
	8528	20	0.05	24	0.4	19
	Means (lo Au)	27	0.52	145	0.5	53
Bonanza	8618	240	13.50	4,020	36.9	10,780
	8620	4,600	32.50	12,800	86.0	17,200
	Means (hi Au)	2,450	23.00	8,410	61.5	13,990
	8617	20	26.00	238	1.0	25
	8619	90	9.00	90	1.2	70
	8621	60	1.50	156	1.2	252
	Means (lo Au)	57	12.20	161	1.1	116

Sadie's Ck.	9977	200	13.50	19,000	10.0	403
	9983	240	33.00	45,000	15.1	10,200
	Means (hi Au)	220	23.20	32,000	12.5	5,301
	9976	100	0.05	<10	<0.4	14
	9978	40	0.25	100	<0.4	47
	9982	20	3.10	400	<0.4	782
	9984	40	0.40	80	<0.4	549
	9986	20	0.15	20	0.4	21
	9988	10	0.05	20	0.4	22
	Means (lo Au)	38	0.66	104	<0.4	239
Summit						
	9432	260	15.00	6,670	14.5	152
	9431	60	0.60	170	<0.4	18
	9434	40	1.35	380	1.0	63
	Means (lo Au)	50	1.00	275	0.6	40
Diabase						
	9436	100	15.00	4,400	24.4	28
	9435	20	0.10	22	<0.4	48
	9435	20	0.30	60	2.0	47
	9438	40	0.50	74	0.6	71
	Means (lo Au)	27	0.30	52	0.9	55
Bluff						
	9983	660	29.00	30,000	97.7	224
	9982	40	0.95	140	0.4	45
Dumps						
	10219	60	13.50	3,250	1.0	750
	10221	120	11.50	18,000	8.0	8,330
	10605	20	8.00	7,170	0.8	117
	10609	20	2.25	1,820	2.2	2,510
	10610	40	10.00	14,800	5.3	1,626
	10622	100	12.50	10,200	5.9	3,490
	Means (hi Au)	68	9.50	9,207	3.9	2,804
	10218	60	2.50	230	<0.4	60
	10625	60	0.40	272	<0.4	13
	10628	100	1.20	690	1.2	200
	Means (lo Au)	73	1.37	397	0.6	91

DDH 81-2						
	8555	430	19.80	10,400	69.7	18
	8563	170	14.60	2,190	23.9	6
	Means (hi Au)	300	17.20	6,295	46.8	12
	8556	50	0.70	14	1.3	3
	8557	100	0.60	128	5.0	6
	8558	40	0.05	22	1.3	2
	8559	60	2.50	704	4.8	4
	8560	30	0.75	140	1.9	2
	8561	20	0.25	22	0.9	2
	8562	20	0.10	12	0.6	1
	Means (lo Au)	46	0.71	149	2.3	3
DDH 81-4						
	9853	20	2.50	1,600	1.4	510
	9854	20	2.25	1,100	1.3	518
	Means (hi Au)	20	2.35	1,350	1.3	514
	9852	20	0.10	<10	<0.4	61
	9855	20	0.05	28	<0.4	34
	Means (lo Au)	20	0.07	16	<0.4	47
DDH 81-7						
	12510	260	19.00	26,000	5.1	41
	12507	80	0.05	<10	<0.4	12
	12508	60	0.65	284	0.8	87
	12511	40	0.10	64	<0.4	13
	12512	20	1.10	702	<0.4	6
	12514	20	0.10	60	<0.4	18
	12515	20	0.05	22	<0.4	23
	Means (lo Au)	40	0.35	190	<0.4	26

APPENDIX II

Harris
EXPLORATION
SERVICES

MINERALOGY AND GEOCHEMISTRY

534 ELLIS STREET, NORTH VANCOUVER, B.C., CANADA V7H 2G6

TELEPHONE (604) 929-5867

Job #86-16

May 14th, 1986

Report for: Murray McClaren,
TRM Engineering Ltd.,
701-744 West Hastings St.,
Vancouver, B.C.
V6C 1A5

LITHOGEOCHEMISTRY OF THE SURF INLET SHEAR ZONE. REPORT NO 2.

Introduction

Initial findings in this study (my preliminary report of April 27th) were sufficiently promising to justify acquisition of an expanded data base.

All the showings and diamond drill holes sampled in the 1981 Cominco programme at Surf Inlet are now represented in the present study. The additional samples are 93 in sumber, over and above the original 69 samples.

The same parameters (Hg, Te, Au, Ag and Cu) which showed potential as discriminants in the preliminary study are here compiled for the additional suite (Table 1). Au, Ag and Cu analyses are existing Cominco data; Hg and Te are new analyses by Chemex Labs.

Some of the additional samples are from showings or drill holes not previously represented; others provide expanded representation of localities included in the first phase of the study.

Enrichment factors (ratios of Hg, Te, Ag and Cu to Au in both mineralized and unmineralized samples) calculated for the newly represented localities, and modified factors (combining the new data with that presented in the preliminary report) for those showings included in the earlier work are compiled in Table 2.

The possibility suggested by the preliminary work, that ore-related samples may exhibit distinctive levels in certain element ratios - notably Hg/Au and Cu/Au, is less clearly displayed by the larger body of data.

Part of the problem is the inadequate representation of locations that can be taken, without doubt, as exemplifiying the productive or economically mineralized environment. There are, in fact, only two such areas presently known within the Surf shear system, namely the Surf and Pugsley ore bodies.

We have a good representation of the Pugsley from the Cominco sampling of the main (900) level. However, the old workings at the Surf Mine are believed to be largely inaccessible to sampling and this, the major producer from the area, is unrepresented in the present study.

It is thus unclear whether the geochemical characteristics exhibited by the

Pugsley samples are typical of all productive segments of the Surf structure or are, perhaps, unique to the Pugsley zone. If material from the Surf Mines could be shown to exhibit similar features, much more confidence could be placed in the fact that the economic zones (and possibly also the adjacent shear zone rocks along strike and up dip) indeed possess a distinctive geochemical finger print.

For purposes of evaluating the present data we have no alternative but to assume that the characteristics of the Pugsley are those of the productive environment in general.

Examination of the enrichment factors in Table 2 reveals a rather high variance within the 30 or so different locations represented.

The locations are tentatively classified as 'ore related', (one area only, Pugsley 900 level), 'near to ore', (within a few hundred meters of the Pugsley) and 'others'. Samples of dump material (presumably from the old workings and, hence, one would assume 'ore-related') constitute a fourth group.

Compared with all other groups, the single ore-related example (Pugsley) shows strong enrichment in Hg and Cu with respect to Au in both mineralized (vein) material and adjacent altered wall rocks (shear zone).

The 'near to ore' examples from the Pugsley area, taken as a group, show, in mineralized samples, no enrichment in Hg* and only moderate enrichment in Cu; in wall rock samples they show weak to moderate enrichment in Hg and rather strong enrichment in Cu. The Bluff showings (representing the only material in the suite from the area of the Surf Mine) show rather strong enrichment in Cu in both mineralized and wall rock samples, but no elevated Hg.

The 'others' group (from showings whose economic potential is presently unknown), like the 'near to ore' group, show no enrichment in Hg in mineralized samples and a markedly low content of Cu relative to Au; in wall rock material both Hg/Au and Cu/Au are quite variable, and relatively enriched Cu is fairly widespread.

Some of this group show partial similarities to the ore-related or near-to-ore chemical profiles. Examples are the Bonanza, which shows enriched Hg and Cu in mineralized samples, though not in wall rocks; and DDH-1, which shows relatively strong enrichment in Hg and Cu in shear zone samples.

The dump samples, as remarked in my previous report, show a surprisingly weak development of the enrichment factors tentatively considered to be characteristic of productive situations. They have Cu/Au ratios approaching those of the near-to-ore examples, but show no tendency for Hg enrichment.

The source of the material in these dumps is not known with certainty. Freeze suggests that the East Dump contains dominantly Surf material, and the West Dump dominantly Pugsley. The chemistry of all three dumps is rather similar and does not resemble the Pugsley pattern.

The ineffectiveness of Te/Au as a discrimator of ore-related vs less favourable areas is a disappointment. Within mineralized samples (>1000 ppb Au) the ratio of Te/Au shows remarkable consistency (ranging from 0.7 - 3.4), with no tendency for enrichment (or, for that matter, depletion) in the ore-related group. In the wall rock samples (<1000 ppb Au) the Te/Au factor is more variable (1.3 - 13.3, with one extreme of 75.8), but again shows no distinctive level in the ore-related groups.

* The Homestake Adit shows the greatest Hg enrichment in wall rocks of all areas after the Pugsley; its Cu/Au ratio, however, is relatively low.

Similar comments apply to the Ag/Au ratio, which is quite variable in the wall rock samples, less so in the mineralized ones, and does not discriminate the ore-related group (except perhaps in the sense that, in high Au samples, it tends to be lowest in the ore-related and near-ore groups).

Conclusions and Recommendations

1. A suite of mineralized and unmineralized samples from the shear zone within the limits of the Surf ore body (from underground sampling or drill core?) is considered essential to a proper evaluation of the potential of the rock geochemical discriminant approach.

2. A series of samples of shear zone material at intervals of, say, 50 m along the Pugsley 900 level, from the portal to the area sampled by Cominco, would provide important information as to the along-strike persistence of the distinctive geochemical parameters established for the Pugsley ore-zone. This would yield some indication of how close to an ore concentration one needs to be in order to detect its influence geochemically,

3. The multi-element analyses done initially on a token suite of 16 samples showed a strong enrichment of Mo in the two samples (one vein, one wall rock) from Pugsley underground. This is the only element (other than those discussed in this report) which, on the basis of this meagre sampling, seems to offer obvious possibilities as a discriminant.

It is recommended that the present study suite of 162 samples, or a selected sub-set thereof, be run for Mo to check out this possibility.

4. Further to the above, the initial set of 16 samples submitted for multi-element scans is really far too limited in scope to provide adequate assessment of the potential of other elements as discriminants. A 30 element ICP analysis (including Mo) can be obtained for around $6.00 per sample compared with $2.00 for Mo alone, so it would probably be well worth running all samples, or a sub-set (as suggested in recommendation 3) for multi-elements. This would help ensure that we are not overlooking any additional element(s) which could be built into a discriminant function.

J.F. Harris Ph.D.

TABLE 1: ANALYTICAL RESULTS

Location		Lab No.	Cominco Field No.	Hg (ppb)	Te (ppm)	Au (ppb)	Ag (ppm)	Cu (ppm)
Pugsley u/g		12488	81-154	850	0.15	48	0.4	168
		12494	160	1600	0.10	10	0.4	34
		12500	166	1700	2.25	1484	1.2	2740
		12503	169	130	0.40	64	0.4	147
Homestake u/g		10204	81-104	280	0.60	240	0.4	24
		10206	106	290	29.00	2900	5.3	4080
		10207	107	120	7.40	7500	1.0	235
Sadie's Creek	165 m	9979	81-82	20	0.20	70	<0.4	32
		9980	83	80	13.30	12000	2.9	42
		9981	84	40	0.75	200	<0.4	44
	145 m	9985	88	40	2.45	1340	<0.4	450
	125 m	9987	90	70	6.90	7900	2.5	2130
	105 m	9989	92	30	0.50	30	0.4	18
		9990	93	30	2.00	440	0.4	724
		9991	94	20	0.10	30	0.4	189
		9992	95	30	2.10	1600	0.4	1380
	95 m	9993	96	10	0.20	10	0.4	112
		9994	97	40	1.75	1760	3.5	1718
		9995	98	70	1.80	960	1.3	1590
		9996	99	50	0.30	100	0.4	740
Summit		9433	81-29B	170	6.00	1760	3.7	15
Bluff		9884	81-73	110	9.20	6230	9.8	67
		9885	74	130	3.20	1520	3.2	43
		9886	75	40	0.10	30	<0.4	442
Bluff	348 m	9887	81-76	30	0.25	100	0.4	241
		9888	77	90	1.80	1400	7.5	9670
		9889	78	20	0.25	160	<0.4	619
East Dump		10624	81-144	40	1.55	980	0.4	202
		10626	146	150	5.70	5210	4.6	1459
		10629	149	40	4.70	4770	1.2	270
		10630	150	50	2.05	144	2.1	444
West Dump		10606	81-126	60	0.30	130	0.6	577
		10613	133	40	0.60	470	0.8	405
		10620	140	80	1.05	864	0.4	790

Location	Lab No.	Cominco Field No.	Hg (ppb)	Te (ppm)	Au (ppb)	Ag (ppm)	Cu (ppm)
Paradise Creek Dump	10212	81-112	110	7.70	2540	0.6	397
	10214	114	70	2.05	580	0.9	689
	10216	116	40	0.45	190	0.7	426
Anaconda	9442	81-38	180	0.10	20	<0.4	8
	9443	39	80	1.00	230	1.3	13
	9444	40	30	0.05	10	<0.4	6
Independence A	9874	81-63	20	0.05	10	<0.4	12
	9875	64	20	0.05	<10	<0.4	3
	9876	65	10	<0.05	<10	<0.4	9
B	9877	66	40	2.40	460	3.6	9350
C	9878	67	10	0.05	50	<0.4	14
	9879	68	20	0.05	10	<0.4	30
	9880	69	10	<0.05	40	<0.4	6
Ridge: Shear Zone A	9810	81-52	30	<0.05	<10	<0.4	23
Shear Zone B	9814	56	20	<0.05	<10	<0.4	14
	9817	59	20	<0.05	<10	<0.4	39
	9819	61	80	5.50	640	7.3	64
	9820	62	20	0.05	<10	<0.4	56
h.. Shear E of DDH 81-1	9439	81-35	40	0.50	104	0.4	337
	9440	36	230	5.00	4230	13.7	185
	9441	37	40	0.10	40	<0.4	54
HW Shear E of DDH 81-2	9446	81-42	20	<0.05	<10	<0.4	21
	9447	43	20	0.05	<10	<0.4	14
<u>Diamond Drill Holes</u>:							
DDH 81-1 114.4 - 115.6	7634		40	0.15	10	<0.4	6
118.7 - 120.0	7637		30	0.10	<10	<0.4	114
131.3 - 132.3	7646		30	0.30	36	<0.4	125
136.7 - 138.1	8529		350	2.35	166	0.6	395
DDH 81-3 67.5 - 69.5	9228		50	<0.05	<10	<0.4	36
75.8 - 77.1	9823		20	0.10	10	0.8	8
77.1 - 77.6	9824		280	3.25	460	2.5	545
77.6 - 78.3	9825		50	0.70	480	0.4	1032
87.2 - 87.8	8630		80	0.25	22	<0.4	30
DDH 81-4 123.9 - 124.9	9846		20	<0.05	<10	<0.4	15
110.7 - 111.7	9860		20	<0.05	<10	<0.4	32

Location		Cominco Lab No.	Field No.	Hg (ppb)	Te (ppm)	Au (ppb)	Ag (ppm)	Cu (ppm)
DDH 81-5	44.2 - 44.7	10229		80	7.00	4950	3.3	752
	45.7 - 46.7	10231		20	0.10	20	<0.4	16
	52.1 - 53.1	10234		20	0.05	40	<0.4	56
	88.2 - 89.2	10238		20	0.25	80	<0.4	117
	89.2 - 90.2	10239		20	0.05	<10	<0.4	26
DDH 81-6	124.1 - 125.1	10654		30	0.15	28	1.2	26
	134.4 - 135.4	10644		20	0.35	140	1.6	15
	139.4 - 140.4	10639		20	0.15	64	1.9	21
	142.4 - 143.4	10636		20	0.05	30	<0.4	13
	145.4 - 146.6	10633		10	4.00	3380	<0.4	11
	146.6 - 147.8	10632		20	0.50	250	<0.4	36
DDH 81-8	67.2 - 68.1	12526		60	0.35	124	<0.4	14
	74.1 - 74.6	12531		50	0.05	160	<0.4	11
	86.4 - 81.3	12535		40	0.05	<10	<0.2	22
	82.7 - 83.1	12537		60	0.45	122	2.3	402
	91.8 - 92.6	12543		70	0.15	70	1.7	125
	105.6 - 106.6	12548		30	<0.05	<10	<0.4	17
DDH 81-9	22.8 - 24.8	13317		40	<0.05	<10	<0.4	9
	30.8 - 32.3	13321		70	0.05	<10	0.4	55
	37.6 - 38.0	13345		60	0.10	<10	<0.4	58
DDH 81-10	53.4 - 53.8	13346		30	<0.05	<10	<0.4	22
	53.8 - 54.0	13377		80	0.10	<10	<0.4	19
	57.0 - 58.0	13350		80	<0.05	<10	<0.4	21
	63.3 - 63.6	13356		210	0.15	<10	<0.4	287
	70.2 - 72.2	13362		70	<0.05	<10	<0.4	15

TABLE 2: ENRICHMENT FACTORS

	High Au (vein material)				Low Au (altered, sheared wall rock)			
	Hg/Au	Te/Au	Ag/Au	Cu/Au	Hg/Au	Te/Au	Ag/Au	Cu/Au
A Ore related								
Pugsley 900 level	0.59	1.4	2.5	2035	12.6	3.4	4.6	8072
B Near to ore								
Pugsley area: Homestake adit	0.11	1.6	0.3	218	15.8	7.4	1.3	318
Sadie's Creek*	0.02	1.0	0.5	438	0.5	4.8	5.9	2252
DDH 4	0.01	1.7	1.0	381	1.8	4.5	(18.2)	3182
DDH 5	0.02	1.4	0.7	152	0.6	3.1	5.6	1500
DDH 6	0.003	1.2	0.1	3	0.2	2.3	9.8	216
Independence**	-	-	-	-	0.25	3.3	6.9	10420
Surf area: Bluff***	0.04	1.2	4.1	3453	0.35	4.0	1.9	3024
C Dumps								
E Dump (mainly Surf ?)	0.02	1.1	0.6	195	0.2	3.3	3.2	593
W Dump (mainly Pugsley ?)	0.005	1.0	0.4	228	0.1	1.3	1.2	1211
Paradise Creek	0.01	1.4	0.4	398	0.2	5.0	1.8	1177
D Unknown								
Anaconda	-	-	-	-	1.1	4.4	6.9	103
Diabase	0.02	3.4	5.5	6	0.5	5.8	17.3	1059
Bonanza	0.3	2.7	7.3	1663	0.3	75.8	6.8	720
Ridge****	-	-	-	-	0.2	8.5	12.1	261
Summit	0.05	2.5	2.2	20	0.2	3.6	2.2	145
Cassie	0.03	0.7	1.5	1	0.2	3.6	3.4	365
Shear E of 81-1	0.05	1.2	3.2	44	0.2	8.5	12.1	261
Shear E of 81-2	-	-	-	-	0.5	4.2	4.2	2708
DDH 81-1	-	-	-	-	2.3	13.3	5.6	2963
81-2	0.05	2.7	7.4	1	0.3	4.8	15.4	20
81-3	-	-	-	-	0.5	4.4	4.1	1692
81-7	0.01	0.7	0.2	2	0.2	1.8	1.0	137
81-8	-	-	-	-	0.6	2.2	9.9	1210
81-9	-	-	-	-	-	-	-	-
81-10	-	-	-	-	-	-	-	-

* Combined factors for the 6 Sadie's Creek showings
** Combined factors for the Independence B and C showings
*** Combined factors for the 2 Bluff showings
**** Combined factors for the Ridge A and B shear zones.

APPENDIX III

Harris
EXPLORATION
SERVICES

MINERALOGY AND GEOCHEMISTRY

534 ELLIS STREET, NORTH VANCOUVER, B.C., CANADA V7H 2G6 TELEPHONE (604) 929-5867

June 13th, 1986

Job #86-18

Report for: Murray McClaren,
TRM Engineering Ltd.,
701-744 West Hastings St.,
VANCOUVER, B.C.
V6C 1A5

SURF INLET LITHOGEOCHEMICAL STUDY: REPORT NUMBER 3

Introduction

Previous work on this study concentrated on the five elements Hg, Te, Au, Ag and Cu. These elements show considerable variation from place to place within the altered rocks and quartz veins of the Surf Shear Zone, and may have potential in discriminating between areas proximal to major (Surf or Pugsley type) mineralization and those of lesser significance.

Early in the study a token set of 16 samples was run for multi-elements by ICP. With the exception of Mo (which was strongly enriched in the two samples from the Pugsley Mine), this work did not indicate the presence of any other elements showing a wide concentration range and association with known ore-grade mineralization. However, the sample coverage was too small for these findings to be considered definitive.

The work described in this report consists of multi-element analyses on a somewhat more extensive sample suite. Its purpose is to establish more firmly that we have not overlooked any other easily analyzable elements with discriminatory capabilities.

The present suite includes two or three samples from most of the showings or drill holes from the 1981 Cominco work included in the previous phase of the study. Significant results are compiled in Table 1. The complete analytical data are also appended.

Discussion

The 30 element ICP analysis is based on an aqua-regia digestion of the sample. Many minerals (especially the silicates) are only partially broken down by this digestion, so that the data for the major elements, for example, and for those trace elements concentrated in silicates and refractory oxides, is, at best, only semi-quantitative.

For the above reason the elements Al, Na, K and Ti can be ignored for the purposes of this study. In any event, they are strongly dependent on primary host rock lithology.

The elements As, Be, Bi, Cd, Ga, La, Sb, Tl, U and W can also be ignored because they show consistently low values throughout (see Appendix).

This could be partly a function of incomplete extraction, but nevertheless is a strong indication that no significant enrichment in these elements is associated with the alteration and mineralizing processes at the Surf. The consistently very low level of As (for which the data are quantitative) is a striking feature and in marked contrast to that found in many other gold deposits.

The low levels of Zn (almost entirely between <10 and 80 ppm) are another notable feature. Clearly the pyrite/chalcopyrite mineralization characteristic of the Surf Shear is essentially devoid of sphalerite (and, for that matter, galena).

One would expect that the aqua-regia extractable Fe analyses could be used as a rough indication of comparative content of pyrite in the samples. However, the surprisingly restricted range (almost entirely between 2 and 6% Fe) in a suite consisting of a mixture of mineralized and unmineralized material suggests that this may not be so. Also the lack of correlation between Fe and Au contents seems contradictory to the conclusion reached from metallurgical studies that the Au is largely contained in the pyrite. Possibly the dominant source of Fe in the analyses of the lower grade (altered shear rock) samples is an ankeritic carbonate.

The Ca and Mg values in the ICP analyses presumably represent mainly the readily extractable, carbonate form of these elements. Variations in Ca/Mg ratio may, therefore, provide a rough measure of relative proportions of calcite and dolomite (or ankerite).

Some differences between the showings are apparent in this factor. Most commonly the Ca/Mg ratio ranges between 2 and 5. Pugsley and the dumps are of this type. The Bluff, Bonanza, Ridge and Summit showings are distinctive in having relatively higher Mg, their Ca/Mg ratios typically being in the range 0.5 - 1.0. DDH-3 and DDH-8 appear particularly enriched in Ca, with ratios in the 5 - 9 range.

Of the elements Ba, Cr, P and Sr (for which extraction is only partial) Sr shows by far the greatest range of variation (1 - 200 ppm). However, there is a close correlation of Sr with Ca and the variation is probably mainly a reflection of relative carbonate contents. Ba does not show this feature; the higher values occur in the least auriferous samples (shear rock as opposed to vein material).

Mn shows fair variation (mainly in the range 200 - 2,000 ppm) but, like Sr, correlates closely with Ca, and probably reflects the content of (ankeritic) carbonate. Highest Mn contents, like those of Ba, are associated with low Au i.e. altered shear zone samples.

The remaining elements in the package are Ag, Co, Cu, Mo, Ni and Pb. These data are quantitative. Ag and Cu values are already available from the existing Cominco data and have been discussed in previous reports. Mo, Co and Ni show ranges of variation of 10 - 15 fold. The latter two elements tend to be highest in the more Fe-rich samples. No correlation with Au content is apparent. The samples from the Bonanza showing are notably enriched in Co and Ni.

Pb is mostly very low (<2 - 4 ppm) throughout the suite. Exceptions are the

Bluff and the E and W Dumps which show Pb in the range 8 - 300 ppm. This may be indicative of the fact that the Surf ore body is relatively somewhat enriched in Pb. The Pugsley samples are consistently low in Pb.

Mo is mostly low (<1 - 3 ppm in 80% of the samples). However, higher values (up to 93 ppm) occur in a few of the showings, most notably the Pugsley. Higher values also occur, though less consistently, in the Homestake, Bluff, East and Paradise Creek dumps, Anaconda and Diabase (see Table 1).

Conclusions

Of the elements tested in this phase of the study, Mo shows the strongest tendency to be concentrated in the ore-related or near-ore locations. Elevated contents of Mo may thus, tentatively, be taken as a favourable indicator.

Showings of 'unknown' character which show some tendency for high Mo are Anaconda and Diabase. Note that this observation is based on only 2 or 3 samples and requires confirmation on additional samples.

Pb is noticeably enriched in the Bluff and East and West dumps but is low at Pugsley. It may be that the Pugsley and Surf ores, despite their proximity, are not geochemically identical. The uniquely Hg-rich character of the Pugsley has already been remarked in previous reports.

The lack of samples from the actual Surf orebody continues to be a serious deficiency in this study. Any such material that can be obtained (on site or from collections) should be included as soon as possible. This would greatly strengthen the reliability of the findings.

The previous recommendation for sampling along the Pugsley main level to investigate the along-strike persistence of the distinctive geochemistry still holds. This should be done at the first available opportunity.

The sample coverage for the multi-element work described in this report is minimal (as few as 2 or 3 samples from many of the locations). Characterization of showings based on these data cannot, therefore, be considered definitive.

On the basis of the work to date, the most favourable geochemical indicators (developed in both mineralized vein material and associated altered shear rock) appear to be enrichment in Hg, Cu and Mo for the Pugsley type and in Cu, Mo and Pb for the Surf type. The relevant factors are summarized in Table 2; those factors showing relative enrichment are highlighted by circling.

Showings not known to be associated with ore but exhibiting partial development of these favourable geochemical features are Anaconda, Diabase, Bonanza and DDH 81-1 (Pugsley type), and DDH 81-3 and 81-8 (Surf type). In the case of Anaconda, 81-3 and 81-8, this characterization is based on low Au (shear rock) samples only, these being the only material available for study. In the case of Bonanza, the enrichment (in Hg, Cu and, possibly, Mo) is apparent only in the high Au samples. The Diabase shows positive ratings in only one of the four factors (Mo in the high Au and Cu in the low Au).

Note that the showings classified as near-to-ore (in a spatial sense) also show only partial resemblances to the profiles provisionally established for the ore-related examples.

It must be emphasized that the ratings for Mo and Pb are based on inadequate sample coverage (in some cases only one or two samples - see Table 1). Analysis of additional samples for these elements is required to confirm their validity as discriminants.

J.F. Harris Ph.D.

TABLE 1: COMPILATION OF SIGNIFICANT DATA FROM ICP MULTI-ELEMENT ANALYSES, WITH COMPARATIVE AU CONTENTS.

Showing	Sample No.	Au ppb	Ca %	Mg %	Ca/Mg	Ba ppm	Sr ppm	Mn ppm	Mo ppm	Co ppm	Ni ppm	Pb ppm	Fe %
Pugsley u/g													
high Au	12486	1400	0.08	0.05	1.6	20	2	87	39	16	7	2	2.24
	12499	2030	3.93	1.00	3.9	70	111	1335	3	13	12	<2	2.91
	12500	1480	2.93	0.77	3.8	80	52	1189	73	36	15	2	4.60
low Au	12487	124	2.07	0.48	4.3	60	46	610	52	10	6	<2	1.74
	12492	124	3.19	0.86	3.7	70	77	1522	19	43	10	<2	3.21
	12497	456	2.37	0.63	3.8	60	58	901	2	9	9	<2	1.72
Homestake													
high Au	10206	2900	2.13	0.57	3.7	40	41	824	<1	43	19	<2	11.23
	10210	4630	1.79	1.07	1.7	70	140	683	11	14	12	2	2.51
low Au	10204	240	2.34	0.40	5.8	300	23	2255	1	4	8	4	1.30
	10209	90	3.55	1.02	3.5	120	91	1317	<1	17	16	<2	5.07
Sadies Ck													
high Au	9987	7900	0.02	0.04	0.5	20	1	175	2	30	15	2	6.22
	9992	1600	1.35	0.64	2.1	60	22	618	<1	11	9	2	2.57
	9994	1760	0.25	0.06	4.2	<10	8	138	2	72	26	<2	8.06
low Au	9986	20	1.19	1.05	1.1	350	33	630	<1	12	4	4	3.24
	9988	20	1.82	1.15	1.6	180	43	801	<1	12	3	<2	3.41
	9989	30	2.14	1.16	1.8	110	37	986	<1	12	11	4	2.96
	9996	100	2.31	1.37	1.7	80	71	1277	<1	15	14	2	3.12
West Dump													
high Au	10610	14800	2.52	0.75	3.4	60	52	635	1	11	11	26	2.61
low Au	10606	130	2.29	0.80	2.8	90	55	654	3	9	10	300	1.95
Paradise Ck Dump													
high Au	10219	3250	2.33	1.08	2.2	90	100	899	13	16	22	4	3.15
low Au	10218	230	2.33	1.09	2.1	90	100	901	13	16	23	2	3.16
Anaconda													
low Au	9442	20	2.38	1.02	2.3	80	84	637	5	9	17	2	2.52
	9443	230	0.07	0.11	0.6	10	3	169	20	53	14	<2	1.33
Diabase													
high Au	9436	4400	0.80	0.14	5.7	80	16	872	35	14	12	<2	3.72
low Au	9438	74	1.12	0.91	1.2	20	38	657	1	28	24	<2	5.87
Bonanza													
high Au	8618	4020	0.16	0.14	1.1	10	3	409	4	86	117	<2	7.16
low Au	8617	238	2.25	4.40	0.5	450	91	1756	<1	43	178	<2	5.13
	8619	90	1.61	2.14	0.7	180	34	871	<1	24	71	<2	3.45

Showing	Sample No.	Au ppb	Ca %	Mg %	Ca/Mg	Ba ppm	Sr ppm	Mn ppm	Mo ppm	Co ppm	Ni ppm	Pb ppm	Fe %
Ridge													
low Au	9819	640	0.64	1.20	0.5	110	19	712	<1	17	21	4	3.56
	9820	<10	0.64	0.99	0.6	110	17	803	<1	12	9	4	2.95
Summit													
high Au	9432	6670	0.03	0.14	0.2	20	1	116	1	40	17	<2	5.96
low Au	9434	380	0.36	0.73	0.5	100	9	840	<1	15	9	<2	2.43
Cassie													
high Au	8527	6000	0.03	0.03	1.0	40	2	164	2	9	10	<2	2.50
low Au	8524	110	1.09	0.62	1.8	150	30	768	<1	6	5	<2	2.27
	8528	24	2.82	1.81	1.6	170	74	1434	<1	20	4	<2	5.50
DDH 81-1													
low Au	7646	36	4.42	1.00	4.4	90	107	1197	3	17	12	8	2.23
	8529	166	4.54	1.26	3.6	70	101	1120	<1	15	19	2	2.89
DDH 81-2													
high Au	8563	2190	6.34	1.58	4.0	160	149	2295	4	45	21	<2	7.21
	8555	10400	3.33	0.91	3.7	120	126	941	1	20	10	<2	4.30
low Au	8556	14	4.76	1.19	4.0	110	167	1561	<1	7	7	2	2.60
	8557	128	4.19	1.40	3.0	100	164	1198	<1	13	12	<2	3.39
	8558	22	3.95	1.06	3.7	110	149	970	<1	8	10	<2	2.40
	8559	704	3.66	0.96	3.8	120	115	1101	<1	16	10	<2	3.39
	8560	140	7.37	2.38	3.1	310	199	3650	<1	15	9	4	4.31
	8561	22	3.93	0.90	4.4	220	127	1127	2	7	5	<2	2.32
	8562	12	7.10	2.37	3.0	180	174	3279	<1	10	6	<2	3.63
DDH 81-3													
low Au	9824	460	10.45	1.10	9.5	60	330	2369	1	84	22	10	2.73
	8630	22	4.67	1.04	4.5	80	97	1538	<1	9	7	2	2.49
DDH 81-4													
high Au	9853	1600	4.03	0.72	5.6	60	87	1352	2	14	6	2	2.57
	9854	1100	4.69	0.96	4.9	60	99	1444	1	15	5	<2	2.92
low Au	9855	28	4.05	1.29	3.1	50	81	1127	<1	14	4	<2	3.40
DDH 81-5													
high Au	10229	4950	0.98	0.88	1.1	60	94	630	1	11	16	2	3.52
low Au	10234	40	2.37	1.30	1.8	110	57	929	<1	15	5	<2	3.66
	10238	80	3.51	1.25	2.8	70	115	1146	<1	14	8	4	2.92
DDH 81-6													
high Au	10633	3380	1.08	0.11	9.8	20	25	380	4	5	6	6	0.63
low Au	10644	140	5.42	1.05	5.2	70	134	2471	<1	17	9	4	2.45

Showing	Sample No.	Au ppb	Ca %	Mg %	Ca/Mg	Ba ppm	Sr ppm	Mn ppm	Mo ppm	Co ppm	Ni ppm	Pb ppm	Fe %
Bluff													
high Au	9983	3000	0.10	0.43	0.2	20	4	203	4	10	10	8	4.91
	9888	1400	0.03	0.01	3.0	20	1	33	7	42	20	28	5.43
low Au	9889	160	3.55	1.95	1.8	80	80	1499	<1	17	33	28	3.12
	9982	140	0.59	1.28	0.5	80	15	785	1	14	9	10	3.71
E. Dump													
high Au	10626	5210	1.84	0.77	2.4	70	48	596	93	43	15	18	6.22
low Au	10625	272	4.38	1.14	3.8	80	121	1496	3	13	15	20	2.19
DDH 81-7													
high Au	12510	26000	2.72	0.65	4.2	<10	46	981	1	109	29	<2	23.40
low Au	12508	284	4.64	1.13	4.1	80	46	1344	1	17	8	4	3.06
DDH 81-8													
low Au	12526	124	12.48	2.33	5.3	110	92	8380	6	16	10	14	4.54
	12537	122	1.83	0.22	8.3	90	24	812	3	43	44	<2	8.61

TABLE 2: COMPARISON OF POTENTIAL DISCRIMINANT FACTORS

	High Au samples				Low Au samples			
	Hg/Au	Cu/Au	Mo	Pb	Hg/Au	Cu/Au	Mo	Pb
Productive								
Pugsley type								
Pugsley u/g	0.59	2035	38	<2	12.6	8072	21	<2
Surf type (?)								
Bluff	0.04	3453	5	18	0.4	3024	<1	19
Dumps	0.01	250	36	16	0.2	1000	6	107
Near to ore								
Homestake	0.11	218	6	<2	5.8	318	<1	2
Sadie's	0.02	438	2	2	0.5	2252	<1	3
DDH 81-4	0.01	381	2	1	1.8	3182	<1	<2
DDH 81-5	0.01	152	1	2	0.6	1500	<1	2
DDH 81-6	0.01	3	4	6	0.2	216	<1	4
Unknown								
Anaconda	-	-	-	-	1.1	103	12	<2
Diabase	0.02	6	35	<2	0.5	1059	1	<2
Bonanza	0.30	1663	4	<2	0.3	720	<1	<2
Ridge	-	-	-	-	0.2	261	<1	4
Summit	0.05	20	1	<2	0.2	145	<1	<2
Cassie	0.03	1	2	<2	0.2	365	<1	<2
DDH 81-1	-	-	-	-	2.3	2963	2	5
DDH 81-2	0.05	1	3	<2	0.3	20	<1	2
DDH 81-3	-	-	-	-	0.5	1692	<1	6
DDH 81-7	0.01	2	1	<2	0.2	137	1	4
DDH 81-8	-	-	-	-	0.6	1210	5	7

Notes: The Hg/Au and Cu/Au figures are the average ratios as tabulated in my report No 2. The Mo and Pb figures are mean contents in ppm from the ICP data.

APPENDIX IV

Harris
EXPLORATION SERVICES

MINERALOGY AND GEOCHEMISTRY

534 ELLIS STREET, NORTH VANCOUVER, B.C., CANADA V7H 2G6 TELEPHONE (604) 929-5867

Job #86-37

September 2nd, 1986

Report for: Murray McClaren,
TRM Engineering Ltd.,
701-744 West Hastings St.,
Vancouver, B.C.
V6C 1A5

SURF INLET LITHOGEOCHEMICAL STUDY: REPORT NUMBER 4

Introduction

Previous reports in this series have discussed the relative enrichment (with respect to Au) of certain trace elements in samples from different showings within the Surf Shear Zone System.

The objective of the study is to establish parameters which distinguish the known productive situations. Corresponding geochemical data from showings of unknown economic potential within the shear system could them be compared with the type examples and rated in terms of degree of similarity.

The work to date has suffered through including only one known productive example (the Pugsley Mine). The Surf Mine was not sampled during the 1981 programme by Cominco Ltd which has been the chief source of sample material for this study. This situation was rectified during a recent visit to the property by TRM personnel who collected a suite of 7 samples from the 200 level dumps representing the workings at the Surf. Two additional samples from the Pugsley mine were also collected.

The new samples were submitted for Au, Te and Hg analyses by specific methods and for multi-elements by ICP; full results are appended. Results for elements considered as potential discriminators are summarized in the following table:

Sample		ppb Au	Hg	ppm Te	Ag	Cu	Mo	Pb
Pugsley								
Sample A	900 level	1,900	510	10.5	39	>1%	1	6
B	Sadie's Ck showing	450	250	1.0	13	>1%	5	6
Surf								
Sample C	200 level	2,300	130	10.0	2	692	118	4
D	200 level	123,000	1,100	135.0	118	571	356	<2
E	200 level	3,450	50	2.4	2	>1%	9	4
F	200 level	49,000	410	43.0	40	2,459	117	<2
G	200 level	2,700	200	4.0	13	>1%	10	<2
H	200 level	136,500	1,300	210.0	172	>1%	208	<2
J	550 level dump	2,550	100	4.0	17	7,146	2	8
Means (Surf samples)		45,571	470	58.3	52	5,838	117	3

Discussion

Analyses of the additional Pugsley samples, when examined in comparison with the previous results, tend to emphasize the high variance of the data. See tabulations below:

	ppb Au	Hg	ppm Te	Ag	Cu	Mo	Pb
High Au							
12486	14,000	3,400	18.00	29.9	2,340	39	2
12499	2,030	5,600	3.80	1.3	1,586	3	<2
12500	1,484	1,700	2.25	1.2	2,740	73	2
12502	1,140	320	1.55	14.0	31,300		
A	1,900	510	10.50	39.4	est.10%	1	6
Low Au							
12487	124	4,000	0.75	0.4	168	52	<2
12488	48	850	0.15	0.4	244		
12492	124	1,420	0.55	1.8	6,100	19	<2
12494	10	1,600	0.10	0.4	34		
12497	456	2,400	0.85	0.4	65	2	<2
12503	64	130	0.40	0.4	147		
B	450	250	1.00	12.6	est.3%	5	6

Sample A has rather low Hg but very high Te (viz-a-viz Au) compared with most of the others in the high Au group. It also has the highest Ag of all the samples. The Mo content is very low, and the Pb content high compared with the means for the three other samples for which these data are available.

Sample B has low Hg and very high Ag compared with the means of the other low Au samples. It also shows low Mo and higher Pb than the previous means.

The two new samples are possibly not strictly comparable with the previous data because of their excessively Cu-rich character.

The samples from the Surf workings show rather similar characteristics to the dump samples analysed in previous work, but differ from the samples from the Bluff showing (previously thought to be related to the Surf ore body) in having a much lower Cu/Au ratio and much higher Mo contents.

The comparisons are apparent in the following tabulation of potential discriminants, which supercedes the data for productive situations in Table 2 of my previous report (No. 3 of June 13th, 1986).

	High Au samples				Low Au samples			
	Hg/Au	Cu/Au	Mo	Pb	Hg/Au	Cu/Au	Mo	Pb
Pugsley tupe								
Pugsley u/g	0.56	>2035	29	3	8.4	>8072	19	2
Surf type								
Surf u/g	0.01	130	117	3				
Dumps	0.01	250	36	16	0.2	1000	6	107
Bluff showing	0.04	3453	5	18	0.4	3024	<1	19

Note that we still have no data for low Au samples from the Surf. The collection of a few samples of less mineralized shear-rock from the workings is recommended to fill this gap in the data.

Conclusions

The two new samples from the Pugsley tend to differ somewhat from the previously established profiles, perhaps because of their extreme Cu contents.

Au-rich samples from the Surf old workings show a profile similar to that previously established for high Au samples from the dumps.

The mean profiles for high Au samples from Pugsley and Surf are distinctly different in terms of Hg/Au and Cu/Au ratios, both factors being much higher in the Pugsley. The Surf samples are not, in fact, distinguished from the rest of the showings by Hg/Au ratio and only marginally by Cu/Au.

Both productive areas are confirmed as strongly enriched in Mo compared with other showings in the shear. On the other hand, the enrichment in Pb seen in the dump and Bluff samples is not confirmed in the Surf u/g samples and the value of this element as a discriminator is consequently downgraded.

Samples of low Au material from the Surf ore zone are required for further clarification of the picture.

J.F. Harris Ph.D.

APPENDIX V

Harris
EXPLORATION SERVICES

MINERALOGY AND GEOCHEMISTRY

534 ELLIS STREET, NORTH VANCOUVER, B.C., CANADA V7H 2G6 TELEPHONE (604) 929-5867

Job #86-47

Report for: Murray McClaren,
TRM Engineering Ltd.,
701-744 West Hastings St.,
VANCOUVER, V6C 1A5

September 2nd, 1986

SURF INLET STUDY: MINERALOGY AND MODE OF OCCURRENCE OF GOLD

Introduction

This report compares the results of microscopic examinations of 7 recently collected hand specimens from old workings at Surf Inlet with corresponding chemical data. Certain conclusions are drawn with regard to the probable mode(s) of occurrence of the contained Au.

Of the samples studied, one (sample A) came from the Pugsley Mine (900 level) and six from the Surf Mine (sample C from the 200 level: samples D, E, F and G from the 200 level: and sample J from the 550 level dump).

The samples were submitted for chemical analysis of Au and various trace elements. Material from the same samples (except for B and H) was prepared as polished thin sections and examined microscopically by transmitted and reflected light. In the case of samples A and F, selected portions of the hand specimens were reserved for sectioning; in the case of the remaining samples, sections were prepared from crushed assay rejects.

Results

Individual petrographic descriptions of the samples are attached.

The Surf samples are essentially simple intergrowths of pyrite and quartz. The pyrite occurs as disseminations of medium to coarse, semi-coalescent grains in quartz, grading to semi-massive sulfides.

Chalcopyrite is the only other sulfide, occurring as coarse to fine segregations in quartz and on quartz/pyrite contacts, and, less abundantly, as microfracture fillings and tiny discrete inclusions in pyrite.

Accessory gangue constituents are very minor flecks, pockets and intergranular impregnations of sericite and/or carbonate in the quartz.

The single sample from the Pugsley is of different aspect, being an intimate, 3-component, island/interstitial intergrowth of pyrite, chalcopyrite and quartz of the textural type often seen in exhalative massive sulfides.

No native Au was seen in any of the samples, despite the fact that several of them have Au contents of several oz/ton. Extremely rare, minute specks of a possible telluride mineral were seen as inclusions in pyrite, but in quite inadequate amounts to explain either the Au or Te contents.

The mineralogical observations are consistent with the hypothesis that the Au at Surf Inlet is almost entirely in sub-microscopic form, presumably in the pyrite. The same is probably true of the Te and the Ag.

Somewhat surprisingly, no molybdenite was observed in the slides, although it was noted macroscopically and shows up as a minor component in the chemical analyses.

Chemical data on the new samples is compiled in Table 1, along with corresponding earlier data on Pugsley samples from the lithogeochemical study. All trace elements (including Au) are expressed in the same units (ppm) for easy comparison. Note that 1 oz/ton equals about 35 ppm.

The simple mineralogy revealed by the microscopic work indicates that Fe in Table 1 can be taken as directly proportional to pyrite content (except where very high contents of chalcopyrite are present - essentially only true of sample A).

By the same token, the aqua-regia extractable Ca and Mg analyses in Table 1 represent calcite and dolomite (or ankerite). It is notable that in the few cases where significant levels of these elements are present, Mg is always greatly subordinate to Ca, indicating that the carbonate species is predominantly calcite.

The chalcophile elements As, Pb and Zn are included in the table to demonstrate their notably low levels. The sulfide mineralization of the surf Inlet Shear appears remarkably highly differentiated, in that it contains Fe, S and Cu, but very little else. Characteristic trace elements are Au, Te, Ag, Co and Mo.

Inter-relationships between these elements and the content of pyrite are a matter of some interest.

Au/Te ratios range from about 0.2 - 1.7. This rather wide variation suggests that the Au does not occur consistently as a particular telluride species (confirmed by the lack of observable tellurides in the microscopic work).

Au/Ag ratios are highly variable. They range from 0.04 - 1.7. Both the Pugsley and the Surf contain examples near the top and bottom of this range. The three extremely auriferous Surf samples all show Au/Ag ratios of around unity. However, other samples showing reasonably high Ag contents (0.5 - 1.0 oz/ton or 15 - 35 ppm) contain Au at only a fraction of that concentration.

It seems unlikely, in view of the above, that the Au and Ag are physically combined (as electrum). In any event, if this were so it would have been apparent in the microscope work. The latter work also indicated the absence of any of the usual Ag carrier-minerals such as galena or tetrahedrite; moreover, the analyses show no correlation between Ag and Cu contents which might suggest that the Ag is contained in the accessory chalcopyrite.

Co is a characteristic trace constituent of most pyrite. Levels of this element in the present samples do not appear unusual and, except for a few irregularities, show a general correlation with pyrite contents (as expressed by Fe %).

Mo shows relatively high contents in some of the samples. Its distribution appears erratic and there is no consistent correlation with either Au concentration or pyrite content.

The three elements Au, Ag and Te do show a partial covariance in the sense that all the most auriferous samples (say 14 ppm and over) also contain Ag and Te at similar general levels. However, the relationship breaks down in the less auriferous samples, which sometimes contain Ag and/or Te at levels a factor of 10 or more greater than the Au.

These inconsistent correlations and the absence of microscopically observable specific mineral hosts, lead to the supposition that all three elements occur principally in sub-microscopic form in the dominant sulfide constituent, pyrite.

This supposition would be strengthened if a correlation existed between Au concentration and pyrite content.

Discounting samples A and B (in which much of the Fe is present in chalcopyrite), the ratio of ppm Au to %Fe can be seen from the table to range from around 0.4 up to 6.4. Similar or even wider ranges apply for Ag/Fe and Te/Fe ratios.

This wide range of variation does not invalidate the pyrite-host hypothesis but presumably could mean that there are two kinds of pyrite (auriferous and non-auriferous, or, in general terms to include the Ag and Te as well, 'enriched' and 'normal'). These may be present in varying proportions in the different samples. Alternatively, the lower ratios in the above range may merely represent degrees of inter-molecular absorption, solid solution, or other physico-chemical form of combination below the maximum 'saturation' level.

The microscopic work provides no confirmation of the 'two kinds of pyrite' theory (though these need not be optically distinctive). The pyrite looks perfectly normal and homogenous.

Further data on the trace element content of the Surf Inlet pyrite could be obtained by laboratory mineral separation techniques (heavy liquids or flotation) followed by chemical analyses and/or microprobe work. Gary Hawthorn's preliminary metallurgical test work on Surf material provides a starting point for such an investigation.

J.F. Harris Ph.D.

TABLE 1 Chemical Analyses, Pugsley and Surf Mines.

	parts per million									per cent		
	Au	Te	Ag	Cu	As	Pb	Zn	Mo	Co	Fe	Ca	Mg
Pugsley												
Sample A	1.9	10.5	39.4	>9999	<10	6	126	1	40	21.4	0.38	0.07
Sample B	0.5	1.0	12.6	>9999	<10	6	16	5	5	3.9	0.03	0.01
12486	14.0	18.0	29.9	2340	30	2	70	39	16	2.2	0.08	0.05
12499	2.0	3.8	1.3	1586	10	<2	40	3	13	2.9	3.93	1.00
12500	1.5	2.2	1.2	2740	<10	2	30	73	36	4.6	2.93	0.77
12502	1.1	1.5	14.0	31300								
Surf												
Sample C	2.3	10.0	2.4	692	30	4	8	118	6	1.1	0.02	0.01
Sample D	123.0	135.0	118.0	571	<10	<2	<2	356	92	25.5	0.01	0.02
Sample E	3.4	2.4	2.0	>9999	<10	4	<2	9	68	7.2	0.79	0.07
Sample F	49.0	43.0	40.0	2451	<10	<2	<2	117	105	25.0	0.03	0.02
Sample G	2.7	4.0	13.2	>9999	<10	<2	24	10	36	12.7	0.01	0.01
Sample H	136.5	210.0	172.0	>9999	<10	<2	<2	208	127	25.3	0.04	0.03
Sample J	2.2	4.0	16.6	7146	<10	8	4	2	24	4.8	1.61	0.03

Cu contents denoted as >9999 ppm are estimated from microscopic observations to be in the range 1 - 1.5%, except in sample A where it is about 10%. The level in sample B is unknown.

Sample A (Slide 86-214X)

Estimated mode

Quartz	30
Carbonate	trace
Pyrite	40
Chalcopyrite	30
Hematite) Magnetite)	trace

The portion of the specimen sectioned is probably a particularly sulfide-rich area.

It consists of the three constituents pyrite, chalcopyrite and quartz in intimate intergrowth.

The pyrite consists of a more or less compact aggregate of rounded to sub-angular grains, 0.02 - 2.0mm in size, in a matrix/cement of chalcopyrite. The latter ranges from essentially monomineralic patches, through areas in which chalcopyrite forms the matrix to more or less abundant clusters of pyrite grains, to compact pyrite in which chalcopyrite forms tiny interstitial pockets and micron-scale, threadlike, intergranular fillings.

Similar relationships are seen between quartz and the sulfides. Much of the quartz is as coarse 'kernels' of essentially monomineralic material, but these show gradational boundaries to areas of small rounded islands of quartz in a matrix of sulfides, or intergranular networks of quartz within sulfides.

The scale of 3-component intergrowth extends from millimetres down to the low-micron range.

The only other constituents are scattered tiny grains of partially hematized magnetite in the sulfides, and rare flecks and pockets of fine-grained carbonate in the quartz.

The quartz shows intense strain-polarization, and ribbon-like, shear-induced (?) recrystallization. It may have originated as chert.

The silicate/sulfide intergrowth appears largely the product of contemporaneous crystallization, with local remobilization as evidenced by sulfides apparently filling fractures in gangue and vice-versa, and of chalcopyrite cementing hairline fractures in pyrite with minor marginal replacement.

This texture is of the type commonly seen in exhalative, massive sulfide deposits.

Sample C (Slide 86-216X)

Estimated mode

Quartz	95
Sericite	4
Pyrite	1
Chalcopyrite	trace

This sample (fragments of crushed rock, 0.5 - 7.0mm in size) consists of siliceous gangue with sparsely disseminated sulfides.

The gangue is dominantly quartz, as a simple anhedral aggregate of moderately strained, crenulate/diffuse-margined grains 0.2 - 1.0mm, Local patches of finer-grained material are also seen. Accessory sericite occurs as pockets and wisps of fine-grained sub-oriented to felted material.

Pyrite, of grain size 0.01 - 0.5mm, occurs as liberated particles or discrete grains in quartz. It shows no special affinity for (or avoidance of) the more sericitic gangue.

Chalcopyrite occurs as traces, generally segregated from the pyrite.

Sample D (Slide 86-217X)

Estimated mode

Quartz	34
Sericite	1
Pyrite	65
Chalcopyrite	trace

This sample (crushed rock) is of strongly mineralized material, consisting dominantly of pyrite as grains 0.01 - 1.0mm (rarely to 2.0mm) in size.

Most of the pyrite is as sub-angular, liberated particles.

The gangue is quartz, with very minor wisps of felted sericite. Some of the fragments are composites of quartz and pyrite and the style of intergrowth suggests that the original texture may have been similar to that seen in sample F. The quartz is generally strongly to intensely strained, and of variable grain size. There is some development of ribbon textures and grain boundary granulation/ recrystallization.

The pyrite is essentially monomineralic and appears homogenous. Some of the grains show networks of hairline fractures but without recognizable infillings. This feature may have been partially induced by the crushing process.

Traces of chalcopyrite are the only other sulfide constituent. These occur as rare small discrete grains and tiny (5 - 25 micron) irregular and threadlike inclusions in unfractured pyrite.

Despite the very high assay (3.65 oz/ton), no native Au appears to be present. Nor, for that matter, is there a significant amount of any other discrete potentially Au-bearing phase. One or two examples were seen of minute (<1 - 5 micron) specks of a bright white mineral (telluride?) as inclusions in pyrite, sometimes associated with chalcopyrite (see photomicrograph), but the abundance of this phase is far too low to account for the analyzed concentrations of Au and/or Te.

Sample E (Slide 86-218X)

Estimated mode

Quartz	82
Carbonate	1
Sericite	trace
Chlorite	trace
Pyrite	15
Chalcopyrite	1
Limonite	1

This is a less strongly sulfidic sample than the previous one (D) but is of similar general character. The dominant quartzose gangue exhibits strong strain polarization and extensive granulation/recrystallization features, with local development of lamellar, ribbon-type textures.

Carbonate is the principal trace accessory constituent, as tiny disseminated flecks and intergranular/microbreccia networks.

Pyrite is the dominant sulfide. It occurs mainly as composite particles with quartz and exhibits a much more intimate intergrowth with the gangue than seen in previous samples. It forms segregations up to about 2mm in size but these typically show complex, crenulate/network, replacement-type contacts (on a scale of 10 - 50 microns) with the adjacent quartz.

Chalcopyrite is noticeably more abundant than in the previous Surf samples. It occurs partially as coarse to fine intergrowths in quartz and at quartz/pyrite contacts, and partially as a striking micron-scale microbreccia cementation of much of the pyrite.

Sample F (Slide 86-215X)

Estimated mode

Quartz	40
Sericite	trace
Pyrite	59
Chalcopyrite	1

This slide consists essentially of densely disseminated pyrite in a quartzose matrix.

The pyrite occurs as equant-subhedral grains or aggregated clumps, 0.1 - 5.0mm in size, rather evenly and densely scattered through a matrix/cementing phase of granular quartz. The latter is a rather heterogenous anhedral mosaic of varying grain size (0.1 - 2.0mm), showing more or less intense strain polarization and grain-boundary recrystallization.

It contains occasional randomly oriented flecks and pockets of sericite.

The only other constituent is chalcopyrite which forms rare small segregations in gangue, moulded on to the pyrite 'islands'. Chalcopyrite is also seen as minute, micron-sized, irregular to thread-like inclusions in some of the pyrite grains.

The pyrite grains are commonly transected by networks and microfractures, though for the most part these are devoid of infillings.

It is notable that, despite the assay of over 1 oz/ton, no Au could be found. This supports previous indications that the values in Surf ore must be submicroscopically held in pyrite.

Sample G (Slide 86-219X)

Estimated mode

Quartz	78
Sericite	trace
Pyrite	19
Chalcopyrite	2
Limonite	1

This sample is of similar general character to the others of the suite.

The quartz is predominantly quite coarse-grained, but is strongly strained and shows linear or irregular zones of granulation/recrystallization. The accessory sericite, though rare, is also notably coarser than in previous samples.

Pyrite likewise is generally coarse and predominantly as liberated grains.

The chalcopyrite content here is the highest of all the Surf samples It occurs almost entirely as well-segregated patches in gangue and as liberated grains. A minor proportion occurs in finer-grained form, on pyrite/quartz contacts and as minute inclusions in pyrite (as in sample D). The extensive microfracture-fillings seen in sample E are absent.

A few of the pyrite grains show marginal replacement and multi-directional fracture-filling by limonite.

Sample J (Slide 86-220X)

Estimated mode

Quartz	83
Carbonate	2
Sericite	trace
Pyrite	14
Chalcopyrite	1

This sample is of very similar textural type to sample G, though some of the quartz is rather finer-grained, and it is overall less intensely strained.

Carbonate is a relatively abundant accessory, as small pockets and intergranular impregnations in the quartz, sometimes with associated sericite.

Pyrite and chalcopyrite are both mainly rather coarse-grained and present dominantly as liberated grains. Chalcopyrite sometimes shows intimate intergrowth with carbonate and/or sericite.

APPENDIX VI

A SUMMARY OF SIGNIFICANT RESULTS

B ANALYTICAL PROCEDURES FOR

C ANALYTICAL RESULTS AND PROCEDURE FOR MULTI-ELEMENT I.C.P. ANALYSES

(i) Analytical Results for Progress Report I
(ii) Analytical Results for Progress Report II
(iii) Analytical Results for Progress Report III
(iv) Analytical Results for Progress Report IV

APPENDIX VI-A

Appendix VI-A

Summary of Significant Results

PUGSLEY U/G

			1981 ANALYSES				1986 ANALYSES		
FIELD NO.	LAB NO.	SAMPLE WIDTH (m)	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81-152	12486	2.5	14,000	29.9	2,340	3,400	18.00	39	2
153	12487	2.0	124	0.4	168	4,000	0.75	52	< 2
154	12488	3.0	48	0.4	168	850	0.15	--	--
155		3.0	136	0.4	295	--	--	--	--
156		3.0	22	0.4	102	--	--	--	--
157		3.0	102	0.4	300	--	--	--	--
158	12492	3.0	124	1.8	6,100	1,420	0.55	19	< 2
159		3.0	182	4.2	6,750	--	--	--	--
160	12494	2.0	10	0.4	34	1,600	0.10	--	--
161		3.0	656	3.7	5,470	--	--	--	--
162		3.0	242	0.4	1,465	--	--	--	--
163	12497	3.0	456	0.4	65	2,400	0.85	2	< 2
164		2.0	820	0.9	1,664	--	--	--	--
165	12499	2.0	2,030	1.3	1,586	5,600	3.80	3	2
166	12500	2.0	1,484	1.2	2,740	1,700	2.25	73	2
167		2.0	420	0.5	790	--	--	--	--
168	12502	3.0	1,140	14.0	31,300	320	1.55	--	--
169	12503	3.0	64	0.4	147	130	0.40	--	--
170		3.0	10	0.4	46	--	--	--	--
			1986 ANALYSES						
86-A	A	GR	1,900	39	> 1%	510	10.5	1	6

HOMESTAKE U/G

		1981 ANALYSES			1986 ANALYSES			
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81-103		160	< 0.4	81	--	--	--	--
104	10204	240	0.4	24	280	0.6	1	4
105		140	< 0.4	38	--	--	--	--
106	10206	2,900	5.3	4,080	290	29.00	< 1	< 2
107	10207	7,500	1.0	235	120	7.40	--	--
108	10208	10,500	3.6	1,890	3,000	30.00	--	--
109		90	< 0.4	56	--	--	--	--
110	10210	4,630	5.8	5,150	1,640	13.00	11	2
111	10211	3,860	2.3	763	820	9.50	--	--

All samples taken over 1 m widths.

CASSIE

		1981 ANALYSES			1986 ANALYSES			
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 17	8523	63,000	93.2	26	1,760	22.00	--	--
18	24	110	< 0.4	138	20	0.40	< 1	< 2
19	25	4,300	7.4	11	120	13.00	--	--
20	26	300	0.8	2	40	1.10	--	--
21	27	6,000	11.1	11	100	13.50	2	< 2
22	8528	24	0.4	19	20	0.05	< 1	< 2

DIABASE

		1981 ANALYSES			1986 ANALYSES			
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 31	9435	22	< 0.4	48	20	0.10	--	--
32	36	4,400	24.4	28	100	15.00	35	< 2
33	37	60	2.0	47	20	0.30	--	--
34	38	74	0.6	71	40	0.50	1	< 2

BLUFF
200L ADIT - A

		1981 ANALYSES			1986 ANALYSES			
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 71	9882	140	0.4	45	40	0.95	--	--
72	9883	30,000	97.7	224	660	29.00	--	--

BLUFF
200L ADIT - B

		1981 ANALYSES			1986 ANALYSES			
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 73	9884	6,230	9.8	67	110	9.20	--	--
74	85	1,520	3.2	43	130	3.20	--	--
75	86	30	< 0.4	442	40	0.10	--	--

BLUFF
348m ELEV

FIELD NO.	LAB NO.	1981 ANALYSES Au (ppb)	Ag (ppm)	Cu (ppm)	1986 ANALYSES Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 76	9887	100	0.4	241	30	0.25	--	--
77	88	1,400	7.5	9,670	90	1.80	7	28
78	89	160	< 0.4	619	20	0.25	< 1	28

BONANZA

FIELD NO.	LAB NO.	1981 ANALYSES Au (ppb)	Ag (ppm)	Cu (ppm)	1986 ANALYSES Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 23	8617	238	1.0	25	20	26.00	< 1	< 2
24	18	4,020	36.9	10,780	240	13.50	4	< 2
25	19	90	1.2	70	90	9.00	< 1	< 2
26	20	12,800	86.0	17,200	4,600	32.50	--	--
27	21	156	1.2	252	60	1.50	--	--

ANACONDA

FIELD NO.	LAB NO.	1981 ANALYSES Au (ppb)	Ag (ppm)	Cu (ppm)	1986 ANALYSES Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 38	9442	20	< 0.4	8	180	0.10	5	2
39	9443	230	1.3	13	80	1.00	20	< 2
40	9444	10	< 0.4	6	30	0.05	--	--
41		40	< 0.4	10	--	--	--	--

HW SHEAR E OF DDH81-1

		1981 ANALYSES			1986 ANALYSES			
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 35	9439	104	0.4	337	40	0.50	--	--
36	40	4230	13.7	185	230	5.00	--	--
37	41	40	< 0.4	54	40	0.10	--	--

HW SHEAR E OF DDH-2

		1981 ANALYSES			1986 ANALYSES			
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 42	9446	< 10	< 0.4	21	20	<0.05	--	--
43	47	< 10	< 0.4	14	20	0.05	--	--

SADIE'S CREEK
195 m ELEV.

		1981 ANALYSES			1986 ANALYSES			
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 79	9976	< 10	< 0.4	14	100	0.05	--	--
80	77	19,000	10.0	403	200	13.50	--	--
81	78	100	< 0.4	47	40	0.25	--	--

SADIE'S CREEK
165 m ELEV.

		1981 ANALYSES			1986 ANALYSES			
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 82	9979	70	< 0.4	32	20	0.20	--	--
83	80	12,000	2.9	42	80	13.30	--	--
84	81	200	< 0.4	44	40	0.75	--	--

SADIE'S CREEK
145 m ELEV.

		1981 ANALYSES			1986 ANALYSES			
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 85	9982	400	< 0.4	782	20	3.10	1	10
86	83	45,000	15.1	10,200	240	33.00	4	8
87	84	80	< 0.4	549	40	0.40	--	--
88	85	1,340	< 0.4	450	40	2.45	--	--

SADIE'S CREEK
125 m ELEV.

		1981 ANALYSES			1986 ANALYSES			
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 89	9986	20	0.4	21	20	0.15	< 1	4
90	87	7,900	2.5	2,130	70	6.90	2	2
91	88	20	0.4	22	10	0.05	< 2	< 2

SADIE'S CREEK
105 m ELEV.

		1981 ANALYSES			1986 ANALYSES			
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 92	9989	30	0.4	18	30	0.50	< 1	4
93	90	440	0.4	724	30	2.00	--	--
94	91	30	0.4	189	20	0.10	--	--
95	92	1,600	0.4	1,380	30	2.10	< 1	2

SADIE'S CREEK
95 m ELEV.

		1981 ANALYSES			1986 ANALYSES			
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 96	9993	10	0.4	112	10	0.20	--	--
97	94	1,760	3.5	1,718	40	1.75	2	< 2
98	95	960	1.3	1,590	70	1.80	--	--
99	96	100	0.4	740	50	0.30	< 1	2

SUMMIT

		1981 ANALYSES			1986 ANALYSES			
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 28	9431	170	< 0.4	18	60	0.60	--	--
29A	9432	6,670	14.5	152	260	15.00	1	< 1
29B	9433	1,760	3.7	15	170	6.00	--	--
30	9434	380	1.0	63	40	1.35	< 1	< 2

E-W VEIN AT MOUTH OF SADIE'S CREEK

		1981 ANALYSES						
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81-100		10	11.0	54,100	--	--	--	--
101		20	1.7	3,630	--	--	--	--
102		110	1.1	6,010	--	--	--	--
					--	--	--	--
					1986 ANALYSES			
86-B	B	450	13	> 1%	250	1.0	5	6

RIDGE SHEAR ZONE A

		1981 ANALYSES			1986 ANALYSES			
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 44		< 10	< 0.4	38	--	--	--	--
45		< 10	< 0.4	24	--	--	--	--
46		10	< 0.4	36	--	--	--	--
47		< 10	< 0.4	19	--	--	--	--
48		< 10	< 0.4	15	--	--	--	--
49		< 10	< 0.4	19	--	--	--	--
50		10	< 0.4	19	--	--	--	--
51		< 10	< 0.4	29	--	--	--	--
52	9810	< 10	< 0.4	23	30	< 0.05	--	--
53		< 10	< 0.4	16	--	--	--	--
54		< 10	< 0.4	59	--	--	--	--
55		< 10	< 0.4	15	--	--	--	--

RIDGE SHEAR ZONE B

		1981 ANALYSES						
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 56	9814	< 10	< 0.4	14	20	< 0.05	--	--
57		< 10	< 0.4	12	--	--	--	--
58		< 10	< 0.4	21	--	--	--	--
59	9817	< 10	< 0.4	39	20	< 0.05	--	--
60		< 10	< 0.4	14	--	--	--	--
61	9819	640	7.3	64	80	5.50	< 1	4
62	20	< 10	< 0.4	56	20	0.05	< 1	4

PARADISE CREEK DUMP

		1981 ANALYSES			1986 ANALYSES			
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81-112	10212	2,540	0.6	397	110	7.70	--	--
113		1,600	1.2	1,244	--	--	--	--
114	10214	580	0.9	689	70	2.05	--	--
115		1,620	0.9	616	--	--	--	--
116	10216	190	0.7	426	40	0.45	--	--
117		230	0.4	98	--	--	--	--
118	10218	690	1.2	200	100	1.20	13	2
119	10219	3,250	1.0	750	60	13.50	13	4
120		1,500	1.8	2,500	--	--	--	--
121	10221	18,000	8.0	8,330	120	11.50	--	--
122		3,690	2.4	8,660	--	--	--	--

INDEPENDENCE A

		1981 ANALYSES			1986 ANALYSES			
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 63	9874	10	< 0.4	12	20	0.05	--	--
64	75	< 10	< 0.4	3	20	0.05	--	--
65	76	< 10	< 0.4	9	10	< 0.05	--	--

INDEPENDENCE B

		1981 ANALYSES			1986 ANALYSES			
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 66	9877	460	3.6	9,350	40	2.4	--	--

INDEPENDENCE C

		1981 ANALYSES			1986 ANALYSES			
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 67	9878	50	< 0.4	14	10	0.05	--	--
68	79	10	< 0.4	30	20	0.05	--	--
69	80	40	< 0.4	6	10	< 0.05	--	--

SURF 550 DUMPS - WEST

		1981 ANALYSES			1986 ANALYSES			
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81-125	10605	7,170	0.8	117	20	8.00	--	--
126	10606	130	0.6	577	60	0.30	3	300
127		690	0.7	290	--	--	--	--
128		4,280	9.3	1,646	--	--	--	--
129	10609	1,820	2.2	2,510	20	2.25	--	--
130	10610	14,800	5.3	1,626	40	10.00	1	26
131		560	0.7	272	--	--	--	--
132		1,240	1.0	259	--	--	--	--
133	10633	470	0.8	405	40	0.60	--	--
134		480	0.5	558	--	--	--	--
135		10,200	4.8	1,094	--	--	--	--
136		3,600	2.7	240	--	--	--	--
137		860	0.9	160	--	--	--	--
138		4,900	9.6	1,768	--	--	--	--
139		2,150	1.0	394	--	--	--	--
140	10620	10,200	5.9	3,490	100	12.50	--	--

SURF 550 DUMPS - EAST

		1981 ANALYSES			1986 ANALYSES			
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81-141		1,140	1.9	523	--	--	--	--
142	10622	144	2.1	444	50	2.05	--	--
143		1,080	1.7	3,460	--	--	--	--
144	10624	980	0.4	202	40	1.55	--	--
145	10625	230	< 0.4	60	60	2.50	3	25
146	10626	5,210	4.6	1,459	150	5.70	93	18
147		1,680	1.4	752	--	--	--	--
148	10628	272	< 0.4	13	60	0.40	--	--
149	10629	4,770	1.2	270	40	4.70	--	--
150	10630	144	2.1	444	50	2.05	--	--
151		124	< 0.4	874	--	--	--	--
				1986 ANALYSES				
86-J	J	45,571	52	5,838	470	58.3	117	3

SURF 200L ADIT DUMPS

		1986 ANALYSES						
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 86- C	C	2,300	2	692	130	10.0	118	4
D	D	123,000	118	571	1,100	135.0	356	< 2
E	E	3,450	2	> 1%	50	2.4	9	4
F	F	49,000	40	2,459	410	43.0	117	< 2
G	G	2,700	13	> 1%	200	4.0	10	< 2
H	H	136,500	172	> 1%	1,300	210.0	208	< 2

DDH81-1

		1981 ANALYSES			1986 ANALYSES			
LAB NO.	DEPTH (ft)	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
	5.0- 5.6	116	5.4	440				
	10.5- 11.6	1522	10.3	46				
	18.4- 19.2	24	1.0	50				
	19.2- 20.1	36	2.2	48				
	28.0- 29.0	< 10	1.1	39				
	35.3- 36.3	104	1.1	70				
	45.7- 46.0	< 10	0.6	14				
	47.4- 47.8	14	0.8	58				
	67.1- 67.6	10	0.8	16				
	74.5- 75.3	< 10	0.8	28				
	77.6- 78.6	< 10	0.5	20				
	78.6- 79.6	60	1.2	8				
	90.0- 90.6	< 10	0.5	27				
	90.6- 91.6	30	0.9	13				
	95.9- 96.9	< 10	0.5	28				
	97.9- 98.4	< 10	< 0.4	4				
	99.0- 99.4	< 10	< 0.4	10				
	101.4-101.7	< 10	0.7	30				
	108.1-114.2	< 10	0.4	16				
7634	114.2-115.6	10	< 0.4	66	40	0.15	--	--
	115.6-116.2	12	< 0.4	67	--	--	--	--
7637	118.7-120.0	< 10	< 0.4	114	30	0.10	--	--
7646	131.3-132.3	36	< 0.4	125	30	0.30	3	8
	132.3-136.7	< 10	< 0.4	93	--	--	--	--
8529	136.7-138.1	166	0.6	395	350	2.35	< 1	2
	138.1-139.1	28	0.5	828				
	139.1-139.9	< 10	< 0.4	14				

DDH81-2

		1981 ANALYSES			1986 ANALYSES			
LAB NO.	DEPTH (ft)	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
	8.2- 9.1	< 10	< 0.4	12				
	9.6- 10.6	< 10	< 0.4	6				
	11.1- 12.1	< 10	< 0.4	5				
	25.1- 25.4	< 10	< 0.4	93				
	29.8- 30.0	< 10	< 0.4	10				
	31.0- 31.8	< 10	< 0.4	7				
	34.0- 36.0	< 10	< 0.4	9				
	44.2- 45.1	< 10	< 0.4	13				
	45.8- 46.5	12	< 0.4	18				
	50.1- 51.3	24	< 0.4	15				
	80.1- 81.1	20	0.6	29				
	81.1- 83.1	< 10	< 0.4	12				
	98.7- 99.0	< 10	< 0.4	14				
	102.6-109.1	< 10	< 0.4	18				
	109.1-109.8	42	1.7	5				
	109.8-116.0	< 10	< 0.4	4				
8555	116.0-116.6	10,400	69.7	18	430	19.80	1	< 2
8556	116.6-117.6	14	1.3	3	50	0.70	< 1	2
8557	117.6-118.6	128	5.0	6	100	0.60	< 1	< 2
8558	118.6-119.6	22	1.3	2	40	0.05	< 1	< 2
8559	119.6-120.6	704	4.8	4	60	2.50	< 1	< 2
8560	120.6-121.6	140	1.9	2	30	0.75	< 1	4
8561	121.6-122.6	22	0.9	2	20	0.25	2	< 2
8562	122.6-123.2	12	0.6	1	20	0.10	< 1	< 2
8563	123.2-124.0	2190	23.9	6	170	14.60	4	< 2
	124.0-125.0	< 10	< 0.4	7				
	125.0-127.0	12	0.5	8				

DDH81-3

		1981 ANALYSES			1986 ANALYSES			
LAB NO.	DEPTH (ft)	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
	6.2- 8.2	< 10	< 0.4	24				
	18.9- 19.7	< 10	< 0.4	22				
	23.3- 23.9	< 10	< 0.4	20				
	32.4- 34.4	< 10	< 0.4	16				
	64.0- 64.4	< 10	< 0.4	39				
9228	67.5- 75.8	< 10	< 0.4	33	50	< 0.05	--	--
9823	75.8- 77.1	10	0.8	8	20	0.10	--	--
9824	77.1- 77.6	460	2.5	545	280	3.25	1	10
9825	77.6- 78.3	480	0.4	1032	50	0.70	--	--
	78.3- 79.3	60	0.4	315	--	--	--	--
	79.3- 80.3	< 10	< 0.4	12	--	--	--	--
	80.3- 87.2	< 10	< 0.4	17	--	--	--	--
8630	87.2- 87.8	22	< 0.4	30	80	0.25	< 1	2
	87.8- 90.2	< 10	< 0.4	7				
	93.2- 95.2	< 10	< 0.4	20				
	144.6-145.3	< 10	< 0.4	72				
	157.8-158.5	< 10	< 0.4	110				
	158.5-159.1	16	< 0.4	211				
	159.1-160.0	< 10	< 0.4	26				
	168.8-169.8	20	< 0.4	78				

DDH81-4

		1981 ANALYSES			1986 ANALYSES			
LAB NO.	DEPTH (ft)	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
	5.5- 13.5	< 10	< 0.4	63				
	62.3- 64.3	< 10	< 0.4	23				
	65.9- 67.4	< 10	< 0.4	141				
	86.0- 88.6	< 10	< 0.4	15				
	103.8-104.8	< 10	< 0.4	16				
	109.7-110.7	10	< 0.4	12				
	110.7-114.3	< 10	< 0.4	22				
9860	110.7-111.7	< 10	< 0.4	32	20	< 0.05	--	--
	114.3-115.3	100	< 0.4	118	--	--	--	--
9855	115.3-116.3	28	< 0.4	34	20	0.05	< 1	< 2
9854	116.3-116.9	1100	1.3	518	20	2.25	1	< 2
9853	116.9-117.9	1600	1.4	510	20	2.50	1	2
9852	117.9-118.9	< 10	< 0.4	61	20	0.10	--	--
	118.9-119.9	46	< 0.4	33				
	119.9-120.9	20	< 0.4	20				
	120.9-128.9	< 10	< 0.4	25				
9846	123.9-124.9	< 10	< 0.4	15	20	< 0.05	--	--
	128.9-129.4	140	< 0.4	112				
	129.4-131.6	< 10	< 0.4	16				

DDH81-5

		1981 ANALYSES			1986 ANALYSES			
LAB NO.	DEPTH (ft)	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
	7.1- 8.1	40	< 0.4	53				
	8.1- 9.1	< 10	< 0.4	34				
	9.1- 10.1	10	0.4	35				
	13.6- 14.6	< 10	< 0.4	31				
	43.2- 44.2	< 10	< 0.4	35				
10229	44.2- 44.7	4950	3.3	752	80	7.00	1	2
	44.7- 46.7	20	< 0.4	14	--	--	--	--
10231	45.7- 46.7	20	< 0.4	16	20	0.10	--	--
	46.7- 47.9	16	< 0.4	17	--	--	--	--
	51.1- 52.1	< 10	< 0.4	25	--	--	--	--
10234	52.1- 53.1	40	< 0.4	56	20	0.05	< 1	< 2
	53.1- 53.9	< 10	< 0.4	24	--	--	--	--
	86.2- 87.2	< 10	< 0.4	15	--	--	--	--
	87.2- 88.2	40	< 0.4	14	--	--	--	--
10238	88.2- 89.2	80	< 0.4	117	20	0.25	< 1	4
10239	89.2- 90.2	< 10	< 0.4	26	20	0.05	--	--
	90.2- 90.8	22	< 0.4	24				
	90.8- 91.8	< 10	< 0.4	19				
	93.8- 94.3	< 10	< 0.4	5				
	118.0-118.4	16	1.1	1205				
	121.0-121.8	< 10	< 0.4	529				
	122.1-122.5	< 10	0.4	4800				
	124.7-124.9	< 10	< 0.4	405				

DDH81-6

LAB NO.	DEPTH (ft)	1981 ANALYSES Au (ppb)	Ag (ppm)	Cu (ppm)	1986 ANALYSES Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
	74.7- 79.7	< 10	< 0.4	64				
	81.7- 86.7	< 10	< 0.4	40				
	115.9-116.4	28	< 0.4	7				
	116.4-118.4	< 10	< 0.4	11				
	118.4-120.4	10	< 0.4	9				
	120.4-124.1	< 10	1.0	27				
10654	124.1-125.1	28	1.2	26	30	0.15	--	--
	125.1-126.1	< 10	< 0.4	37				
	126.1-127.1	12	< 0.4	20				
	127.1-134.4	< 10	0.7	32				
10644	134.4-135.4	140	1.6	15	20	0.35	< 1	4
	135.4-136.4	70	1.5	26				
	136.4-137.4	20	1.5	13				
	137.4-139.4	< 10	1.0	10				
10639	139.4-140.4	64	1.9	21	20	0.15	--	--
	140.4-141.4	20	1.2	29				
	141.4-142.4	< 10	< 0.4	52				
10636	142.4-143.4	30	< 0.4	13	20	0.05	--	--
	143.4-144.4	100	< 0.4	62				
	144.4-145.4	90	< 0.4	12				
10633	145.4-146.6	3380	< 0.4	11	10	4.00	4	6
10632	146.6-147.8	250	< 0.4	36	20	0.50	--	--

DDH81-7

		1981 ANALYSES			1986 ANALYSES			
LAB NO.	DEPTH (ft)	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
	58.3- 58.6	40	< 0.4	24				
12507	58.6- 60.1	< 10	< 0.4	12	80	0.05	--	--
12508	60.1- 60.8	284	0.8	87	60	0.65	1	4
	60.8- 61.4	384	< 0.4	7	--	--	--	--
12510	61.4- 61.5	26,000	5.1	41	260	19.00	1	< 2
12511	61.5- 62.6	64	< 0.4	13	40	0.10	--	--
12512	62.6- 63.8	702	< 0.4	6	20	1.10	--	--
	63.8- 64.8	170	< 0.4	79	--	--	--	--
12514	64.8- 65.8	60	< 0.4	18	20	0.10	--	--
12515	65.8- 66.8	22	< 0.4	23	20	0.05	--	--
	66.8- 67.8	42	< 0.4	9				
	67.8- 72.8	< 10	< 0.4	14				
	97.1- 97.4	< 10	< 0.4	7				
	98.8- 98.9	< 10	< 0.4	407				
	121.7-122.3	< 10	< 0.4	81				
	126.8-127.2	< 10	< 0.4	34				
	127.4-128.4	22	< 0.4	45				
	128.4-129.7	64	< 0.4	83				

DDH81-8

LAB NO.	DEPTH (ft)	1981 ANALYSES Au (ppb)	Ag (ppm)	Cu (ppm)	1986 ANALYSES Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
12526	67.2- 68.1	124	< 0.4	14	60	0.35	6	14
	68.1- 69.0	< 18	< 0.4	12				
	69.0- 69.2	120	< 0.4	35				
	69.2- 71.6	30	< 0.4	11				
	71.6- 72.0	< 10	< 0.4	21				
12531	74.1- 74.6	160	< 0.4	11	50	0.05	--	--
	74.6- 75.6	20	< 0.4	16				
	75.6- 75.9	56	< 0.4	19				
	75.9- 77.0	72	< 0.4	20				
12535	80.4- 81.3	< 10	< 0.4	22	40	0.05	--	--
	82.2- 82.7	< 10	< 0.4	8	--	--	--	--
12537	82.7- 83.1	122	2.3	402	60	0.45	3	< 2
	83.1- 84.5	< 10	< 0.4	33	--	--	--	--
	87.8- 91.8	< 10	< 0.4	12	--	--	--	--
12543	91.8- 92.6	70	1.7	125	70	0.15	--	--
	92.6- 96.6	< 10	< 0.4	13	--	--	--	--
	99.2- 99.7	< 10	< 0.4	21	--	--	--	--
12548	105.6-106.6	< 10	< 0.4	17	30	0.05	--	--
	109.2-111.6	< 10	< 0.4	17				
	112.6-113.6	< 10	< 0.4	8				
	117.4-121.3	< 10	< 0.4	24				

DDH81-9

LAB NO.	DEPTH (ft)	1981 ANALYSES Au (ppb)	Ag (ppm)	Cu (ppm)	1986 ANALYSES Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
13317	22.8- 24.8	< 10	< 0.4	9	40	< 0.05	--	--
13321	30.8- 32.8	< 10	0.4	55	70	0.05	--	--
13345	37.6- 38.0	< 10	< 0.4	58	60	0.10	--	--
	22.8- 47.0	< 10	< 0.4	20				
	52.0- 52.4	< 10	< 0.4	72				
	58.3- 58.9	16	< 0.4	11				
	58.9- 61.6	< 10	< 0.4	10				
	65.5- 68.6	< 10	< 0.4	160				
	77.9- 78.7	< 10	< 0.4	55				
	80.5- 80.7	< 10	< 0.4	64				
	80.9- 81.6	< 10	< 0.4	196				
	84.6- 85.5	< 10	< 0.4	211				
	87.6- 87.9	< 10	< 0.4	158				
	90.2- 91.8	< 10	< 0.4	57				

DDH81-10

LAB NO.	DEPTH (ft)	1981 ANALYSES Au (ppb)	Ag (ppm)	Cu (ppm)	1986 ANALYSES Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
	26.1- 27.1	< 10	< 0.4	65				
	38.2- 39.6	< 10	< 0.4	19				
	49.2- 49.5	< 10	< 0.4	6				
13346	53.4- 53.8	< 10	< 0.4	22	30	< 0.05	--	--
13377	53.8- 54.0	< 10	< 0.4	19	80	0.10	--	--
	54.0- 63.3	< 10	< 0.4	22	--	--	--	--
13350	57.0- 58.0	< 10	< 0.4	21	80	< 0.05	--	--
13356	63.3- 63.6	< 10	< 0.4	287	210	0.15	--	--
	63.6- 72.2	< 10	< 0.4	13				
13362	70.2- 72.2	< 10	< 0.4	15	70	< 0.05	--	--
	103.4-104.7	< 10	< 0.4	49				
	106.4-106.7	< 10	< 0.4	50				
	111.6-113.0	< 10	< 0.4	55				
	113.5-114.3	< 10	< 0.4	30				
	124.4-125.1	< 10	< 0.4	41				
	127.1-129.0	< 10	< 0.4	49				
	129.4-129.9	< 10	< 0.4	16				
	148.0-149.5	< 10	< 0.4	69				

APPENDIX VI-B

PPM ARSENIC AND SELENIUM

A 1.0 Gram sample is digested with a mixture of perchloric and nitric acid to strong fumes of perchloric acid. The digested solution is diluted to volume and mixed. An aliquot of the digest is acidified, reduced with KI and mixed. A portion of the reduced solution is converted to the metal hydrides with NaBH4 and the arsenic and selenium content determined using flameless atomic absorption.

Detection limit: 1 ppm

Tellurium ppm:

A 5.0 gram sample is digested with aqua-regia to dryness. The residue is taken up in 25% HCl and the solution adjusted with HBr to 3M Br^-. After the reduction of iron with abscorbic acid the tellurium bromide complex is extracted into MIBK, washed and analyzed via A.A., correcting for background absorption.

Detection limit: 0.1 ppm

Gold F.A.-A.A. Combo Method ppb:

For low grade samples and geochemical materials, 10 gram samples are fused in litharge, carbonate and siliceous flux with the addition of 10 mg of Au-free Ag metal and cupelled. The silver bead is parted with dilute HNO_3 and then treated with aqua regia. The salts are dissolved in dilute HCl and analyzed for Au on an atomic absorption spectrophotometer.

Detection limit: 5 ppb

Mercury ppb:

The sample is digested with nitric acid plus a small amount of hydrochloric acid. Following digestion the resulting clear solution is transferred to a reaction flask connected to a closed system absorption cell. Stannous sulfate is rapidly added to reduce mercury to its elemental state. The mercury is then flushed out of the reaction vessel into the absorption cell where it is measured by cold vapour atomic absorption methods with a Varian Spectrophotometer. The absorbance of samples is compared with the absorbance of freshly - prepared mercury standard solutions carried through the same procedure.

Detection limit: 5 ppb

APPENDIX VI-C

APPENDIX VI-C(i)

Analytical Results for Progress Report 1

ANALYTICAL RESULTS

Location	Lab. No	Chemex, 1986		Cominco, 1981		
		Hg (ppb)	Te (ppm)	Au (ppb)	Ag (ppm)	Cu (ppm)
Pugsley u/g						
	12486	3,400	18.00	14,000	29.9	2,340
	12499	5,600	3.80	2,030	1.3	1,586
	12502	320	1.55	1,140	14.0	31,300
	Means (hi Au)	3,106	7.80	5,723	15.1	11,742
	12487	4,000	0.75	124	0.4	168
	12492	1,420	0.55	124	1.8	6,100
	12497	2,400	0.85	456	0.4	65
	Means (lo Au)	2,607	0.72	235	0.87	2,111
Homestake u/g						
	10208	3,000	30.00	10,500	3.6	1,890
	10210	1,640	13.00	4,630	5.8	5,150
	10211	820	9.50	3,860	2.3	763
	Means (hi Au)	1,820	17.50	6,330	3.9	2,601
	10203	240	1.25	160	<0.4	81
	10205	100	0.55	140	<0.4	38
	10209	3,000	2.30	90	<0.4	56
	Means (lo Au)	1,113	1.37	130	<0.4	58
Cassie	8523	1,760	22.00	63,000	93.2	26
	8525	120	13.00	4,300	7.4	11
	8527	100	13.50	6,000	11.1	11
	Means (hi Au)	660	16.20	24,330	37.2	16
	8524	20	0.40	110	<0.4	138
	8526	40	1.10	300	0.8	2
	8528	20	0.05	24	0.4	19
	Means (lo Au)	27	0.52	145	0.5	53
Bonanza	8618	240	13.50	4,020	36.9	10,780
	8620	4,600	32.50	12,800	86.0	17,200
	Means (hi Au)	2,450	23.00	8,410	61.5	13,990
	8617	20	26.00	238	1.0	25
	8619	90	9.00	90	1.2	70
	8621	60	1.50	156	1.2	252
	Means (lo Au)	57	12.20	161	1.1	116

Sadie's Ck.	9977	200	13.50	19,000	10.0	403
	9983	240	33.00	45,000	15.1	10,200
	Means (hi Au)	220	23.20	32,000	12.5	5,301
	9976	100	0.05	<10	<0.4	14
	9978	40	0.25	100	<0.4	47
	9982	20	3.10	400	<0.4	782
	9984	40	0.40	80	<0.4	549
	9986	20	0.15	20	0.4	21
	9988	10	0.05	20	0.4	22
	Means (lo Au)	38	0.66	104	<0.4	239
Summit						
	9432	260	15.00	6,670	14.5	152
	9431	60	0.60	170	<0.4	18
	9434	40	1.35	380	1.0	63
	Means (lo Au)	50	1.00	275	0.6	40
Diabase						
	9436	100	15.00	4,400	24.4	28
	9435	20	0.10	22	<0.4	48
	9435	20	0.30	60	2.0	47
	9438	40	0.50	74	0.6	71
	Means (lo Au)	27	0.30	52	0.9	55
Bluff						
	9983	660	29.00	30,000	97.7	224
	9982	40	0.95	140	0.4	45
Dumps						
	10219	60	13.50	3,250	1.0	750
	10221	120	11.50	18,000	8.0	8,330
	10605	20	8.00	7,170	0.8	117
	10609	20	2.25	1,820	2.2	2,510
	10610	40	10.00	14,800	5.3	1,626
	10622	100	12.50	10,200	5.9	3,490
	Means (hi Au)	68	9.50	9,207	3.9	2,804
	10218	60	2.50	230	<0.4	60
	10625	60	0.40	272	<0.4	13
	10628	100	1.20	690	1.2	200
	Means (lo Au)	73	1.37	397	0.6	91

DDH 81-2						
	8555	430	19.80	10,400	69.7	18
	8563	170	14.60	2,190	23.9	6
	Means (hi Au)	300	17.20	6,295	46.8	12
	8556	50	0.70	14	1.3	3
	8557	100	0.60	128	5.0	6
	8558	40	0.05	22	1.3	2
	8559	60	2.50	704	4.8	4
	8560	30	0.75	140	1.9	2
	8561	20	0.25	22	0.9	2
	8562	20	0.10	12	0.6	1
	Means (lo Au)	46	0.71	149	2.3	3
DDH 81-4						
	9853	20	2.50	1,600	1.4	510
	9854	20	2.25	1,100	1.3	518
	Means (hi Au)	20	2.35	1,350	1.3	514
	9852	20	0.10	<10	<0.4	61
	9855	20	0.05	28	<0.4	34
	Means (lo Au)	20	0.07	16	<0.4	47
DDH 81-7						
	12510	260	19.00	26,000	5.1	41
	12507	80	0.05	<10	<0.4	12
	12508	60	0.65	284	0.8	87
	12511	40	0.10	64	<0.4	13
	12512	20	1.10	702	<0.4	6
	12514	20	0.10	60	<0.4	18
	12515	20	0.05	22	<0.4	23
	Means (lo Au)	40	0.35	190	<0.4	26

Chemex Labs Ltd.

•Analytical Chemists •Geochemists •Registered Assayers

212 Brooksbank Ave.
North Vancouver, B.C.
Canada V7J 2C1
Telephone: (604) 984-0221
Telex: 043-52597

CERTIFICATE OF ANALYSIS

TO : TRM ENGINEERING LTD.

701 - 744 W. HASTINGS ST.
VANCOUVER, B.C.
V6C 1A5

CERT. # : A8611183-001-A
INVOICE # : I8611183
DATE : 13-MAR-86
P.O. # : NONE
HALO STUDY

Semi quantitative multi element ICP analysis

Nitric-Aqua-Regia digestion of 0.5 gm of material followed by ICP analysis. Since this digestion is incomplete for many minerals. values reported for Al, Sb, Ba, Be, Ca, Cr, Ga, La, Mg, K, Na, Sr, Tl, Ti, W and V can only be considered as semi-quantitative.

COMMENTS :
ATTN: MURRAY McCLAREN CC: J.E. HARRIS

Sample description	Al %	Ag ppm	As ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	K %	La ppm
2324	0.09	15.6	210	<10	<0.5	<2	0.01	56.0	8	181	1237	35.90	<10	<0.01	<10
8524	1.27	0.2	<10	150	<0.5	<2	1.09	<0.5	6	157	136	2.27	<10	0.41	<10
8523	2.67	0.2	<10	170	<0.5	<2	2.92	<0.5	20	68	9	5.50	10	0.40	<10
8555	1.35	44.0	10	120	<0.5	<2	3.32	<0.5	20	78	7	4.30	<10	0.26	<10
8556	0.98	0.4	10	110	<0.5	<2	4.76	<0.5	7	29	<1	2.60	<10	0.31	<10
8557	1.43	1.4	10	100	<0.5	<2	4.19	<0.5	13	39	<1	3.39	<10	0.21	<10
8558	1.32	0.4	10	110	<0.5	<2	3.95	<0.5	8	30	<1	2.40	10	0.28	<10
8559	0.74	3.0	10	120	<0.5	<2	3.66	<0.5	16	41	<1	3.39	<10	0.29	<10
8560	1.78	1.2	10	310	<0.5	<2	7.37	<0.5	15	25	<1	4.31	10	0.93	<10
8561	1.28	0.2	<10	220	<0.5	<2	3.93	<0.5	7	26	<1	2.32	10	0.61	<10
8562	1.17	0.2	10	180	<0.5	<2	7.10	<0.5	10	5	1	3.63	10	0.64	<10
8563	1.29	19.2	10	160	<0.5	<2	6.34	<0.5	45	39	6	7.21	10	0.44	<10
9619	2.20	0.8	<10	180	<0.5	<2	1.61	<0.5	24	406	77	3.45	<10	0.19	10
9986	1.50	0.2	<10	350	<0.5	<2	1.19	<0.5	12	64	16	3.24	10	0.46	<10
9988	1.62	0.2	<10	180	<0.5	<2	1.82	<0.5	12	60	14	3.41	10	0.28	<10
10802	0.13	48.0	>9999	10	<0.5	<2	0.05	>99.9	46	2	4006	35.14	<10	<0.01	<10
10804	0.05	30.0	>9999	<10	<0.5	<2	0.10	>99.9	8	<1	3514	37.67	<10	<0.01	<10
12486	0.10	28.0	30	20	<0.5	<2	0.08	1.0	16	265	2317	2.24	<10	<0.01	<10
12487	0.84	0.2	<10	60	<0.5	<2	2.07	<0.5	10	174	171	1.74	<10	0.12	<10

Sample description	Mg %	Mn ppm	Mo ppm	Na %	Ni ppm	P ppm	Pb ppm	Sb ppm	Sr ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm		
2324	0.04	8	<1	<0.01	<1	140	<2	<10	1	<0.01	<10	<10	<1	<10	2090	--	--
8524	0.62	768	<1	0.03	5	930	<2	<10	30	<0.01	<10	<10	24	<10	30	--	--
8523	1.81	1434	<1	0.03	4	1240	<2	<10	74	0.07	<10	<10	73	<10	90	--	--
8555	0.91	941	1	0.03	10	1150	<2	<10	126	<0.01	<10	<10	21	<10	30	--	--
8556	1.19	1561	<1	0.02	7	1090	2	<10	167	<0.01	<10	<10	21	<10	20	--	--
8557	1.40	1198	<1	0.05	12	1030	<2	<10	164	<0.01	<10	<10	27	<10	50	--	--
8558	1.06	970	<1	0.05	10	960	<2	<10	149	<0.01	<10	<10	23	<10	40	--	--
8559	0.96	1101	<1	0.06	10	870	<2	<10	115	<0.01	<10	<10	11	<10	10	--	--
8560	2.38	3650	<1	0.10	9	770	4	<10	199	<0.01	<10	<10	33	<10	10	--	--
8561	0.90	1127	2	0.08	5	1120	<2	<10	127	<0.01	<10	<10	22	<10	10	--	--
8562	2.37	3279	<1	0.03	6	1120	<2	<10	174	<0.01	<10	<10	21	<10	10	--	--
8563	1.58	2295	4	0.05	21	1070	<2	<10	149	<0.01	<10	<10	20	<10	10	--	--
9619	2.14	871	<1	0.02	71	610	<2	<10	34	<0.01	<10	<10	39	<10	50	--	--
9986	1.05	630	<1	0.10	4	1010	4	<10	33	0.19	<10	<10	66	<10	70	--	--
9988	1.15	801	<1	0.07	2	1100	<2	<10	43	0.15	<10	<10	58	<10	70	--	--
10802	0.03	30	23	<0.01	<1	490	8776	90	5	<0.01	<10	<10	<1	<10	>9999	--	--
10804	0.02	298	39	<0.01	<1	530	200	190	3	<0.01	<10	<10	<1	<10	>9999	--	--
12486	0.05	287	39	<0.01	7	130	2	<10	2	<0.01	<10	<10	3	<10	70	--	--
12487	0.48	610	52	0.01	6	370	<2	<10	46	0.07	<10	<10	12	<10	20	--	--

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CERTIFICATE OF ANALYSIS

TO : TRM ENGINEERING LTD.

701 - 744 W. HASTINGS ST.
VANCOUVER, B.C.
V6C 1A5

CERT. # : A8611182-001-A
INVOICE # : I8611182
DATE : 13-MAR-86
P.O. # : NONE
HALO STUDY

ATTN: MURRAY McCLAREN CC: J.F. HARRIS

Sample description	Prep code	Se ppm	Rb ppm				
2324	214	4	3	--	--	--	--
8524	214	1	50	--	--	--	--
3528	214	1	44	--	--	--	--
8555	214	1	34	--	--	--	--
8556	214	1	43	--	--	--	--
8557	214	1	24	--	--	--	--
8558	214	1	27	--	--	--	--
8559	214	1	34	--	--	--	--
8560	214	1	34	--	--	--	--
8561	214	1	42	--	--	--	--
8562	214	1	50	--	--	--	--
8563	214	1	37	--	--	--	--
8619	214	1	42	--	--	--	--
9986	214	1	19	--	--	--	--
9988	214	1	26	--	--	--	--
10802	214	3	2	--	--	--	--
10804	214	4	22	--	--	--	--
12486	214	1	3	--	--	--	--
12487	214	1	18	--	--	--	--

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SURE

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TO : TRM ENGINEERING LTD.

701 - 744 W. HASTINGS ST.
VANCOUVER, B.C.
V6C 1A5

CERT. # : A8611182-001-A
INVOICE # : I8611182
DATE : 13-MAR-86
P.O. # : NONE
HALO STUDY

ATTN: MURRAY McCLAREN CC: J.F. HARRIS

Sample description	Prep code	C %					
2324	214	0.07	--	--	--	--	--
8524	214	0.10	--	--	--	--	--
8528	214	0.74	--	--	--	--	--
8555	214	1.05	--	--	--	--	--
8556	214	1.93	--	--	--	--	--
8557	214	1.50	--	--	--	--	--
8558	214	1.36	--	--	--	--	--
8559	214	1.64	--	--	--	--	--
8560	214	3.91	--	--	--	--	--
8561	214	1.64	--	--	--	--	--
8562	214	3.76	--	--	--	--	--
8563	214	2.69	--	--	--	--	--
8619	214	0.41	--	--	--	--	--
9986	214	0.05	--	--	--	--	--
9988	214	0.29	--	--	--	--	--
10802	214	0.05	--	--	--	--	--
10804	214	0.31	--	--	--	--	--
12486	214	0.02	--	--	--	--	--
12487	214	0.39	--	--	--	--	--

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W. Sentmanini
Registered Assayer, Province of British Columbia

SURF

APPENDIX VI-C(ii)

Analytical Results for Progress Report 2

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TO : TRM ENGINEERING LTD.

701 - 744 W. HASTINGS ST.
VANCOUVER, B.C.
V6C 1A5

CERT. # : A8611181-001-A
INVOICE # : I8611181
DATE : 17-MAR-86
P.C. # : NONE
HALO STUDY

ATTN: MURRAY McCLAREN CC: J.F. HARRIS

Sample description	Prep code	Hg ppb	Te ppm	Au			
8523	214	1760	22.00	1.84	--	--	--
8525	21-	120	13.00	.12	--	--	--
8526	214	40	1.10	--	--	--	--
8527	214	100	16.00	.18	--	--	--
8617	214	20	26.00	--	--	--	--
8618	214	240	13.50	--	--	--	--
8620	214	4600	32.50	--	--	--	--
8621	214	60	1.50	--	--	--	--
9431	214	60	0.60	--	--	--	--
9432	214	260	15.00	--	--	--	--
9434	214	40	1.35	--	--	--	--
9435	214	20	0.10	--	--	--	--
9436	214	100	15.00	--	--	--	--
9437	214	20	0.30	--	--	--	--
9438	214	40	0.50	--	--	--	--
9852	214	20	0.10	--	--	--	--
9853	214	20	2.50	--	--	--	--
9854	214	20	2.25	--	--	--	--
9855	214	20	0.05	--	--	--	--
9882	214	40	0.95	--	--	--	--
9883	214	660	29.00	--	--	--	--
9976	214	100	0.05	--	--	--	--
9977	214	200	13.50	--	--	--	--
9978	214	40	0.25	--	--	--	--
9982	214	20	3.10	--	--	--	--
9983	214	240	33.00	--	--	--	--
9984	214	40	0.40	--	--	--	--
10203	214	240	1.25	--	--	--	--
10205	214	100	0.55	--	--	--	--
10208	214	3000	30.00	.3	--	--	--
10209	214	3000	2.30	--	--	--	--
10210	214	1640	13.00	.13	--	--	--
10211	214	820	9.50	.11	--	--	--
10218	214	60	2.50	--	--	--	--
10219	214	60	13.50	--	--	--	--
10221	214	120	11.50	--	--	--	--
10605	214	20	8.00	--	--	--	--
10609	214	20	2.25	--	--	--	--
10610	214	40	10.00	--	--	--	--
10622	214	100	12.50	--	--	--	--

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TO : TRM ENGINEERING LTD.

701 - 744 W. HASTINGS ST.
VANCOUVER, B.C.
V6C 1A5

CERT. # : A8611181-002-A
INVOICE # : I8611181
DATE : 17-MAR-86
P.O. # : NONE
HALO STUDY

ATTN: MURRAY McCLAREN CC: J.F. HARRIS

Sample description	Prep code	Hg ppb	Te ppm				
10625	214	60	0.40	--	--	--	--
10628	214	100	1.20	--	--	--	--
12492	214	1420	0.55	--	--	--	--
12497	214	2400	0.85	--	--	--	--
12499	214	5600	3.80	--	--	--	--
12502	214	320	1.55	--	--	--	--
12507	214	80	0.05	--	--	--	--
12508	214	60	0.65	--	--	--	--
12510	214	260	19.00	--	--	--	--
12511	214	40	0.10	--	--	--	--
12512	214	20	1.10	--	--	--	--
12514	214	20	0.10	--	--	--	--
12515	214	20	0.05	--	--	--	--

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APPENDIX VI-C(iii)

Analytical Results for Progress Report 3

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Canada V7J 2C1
Telephone:(604) 984-0221
Telex: 043-52597

DUPLICATE

Semi quantitative multi element ICP analysis

Nitric-Aqua-Regia digestion of 0.5 gm of material followed by ICP analysis. Since this digestion is incomplete for many minerals. values reported for Al, Sb, Ba, Be, Ca, Cr, Ga, La, Mg, K, Na, Sr, Tl, Ti, W and V can only be considered as semi-quantitative.

CERTIFICATE OF ANALYSIS

TO : TRM ENGINEERING LTD.

701 - 744 W. HASTINGS ST.
VANCOUVER, B.C.
V6C 1A5

CERT. # : A8612944-001-A
INVOICE # : I8612944
DATE : 23-JUN-86
P.O. # : NONE

COMMENTS :
ATTN: MURRAY McCLAREN CC: J. F. HARRIS

Sample description	Al %	Ag ppm	As ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	K %	La ppm	Mg %	Mn ppm	Mo ppm	Na %	Ni ppm	P ppm	Pb ppm	Sb ppm	Sr ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm		
8527	0.21	10.0	<10	40	<0.5	<2	0.03	<0.5	9	309	9	2.50	<10	0.09	<10	0.03	164	2	0.01	10	140	<2	<10	2	<0.01	<10	<10	4	<10	<10	--	--
8617	2.67	0.6	<10	450	<0.5	<2	2.25	0.5	43	992	27	5.13	10	<0.01	10	4.40	1756	<1	0.01	178	410	<2	<10	91	<0.01	<10	<10	59	<10	90	--	--
8618	0.15	26.0	<10	10	<0.5	<2	0.16	1.0	86	229	>9999	7.16	<10	<0.01	<10	0.14	403	4	<0.01	117	280	<2	<10	3	<0.01	<10	<10	2	<10	50	--	--
9432	0.31	11.6	<10	20	<0.5	<2	0.03	0.5	40	164	178	5.96	<10	0.06	<10	0.14	116	1	<0.01	17	100	<2	<10	1	<0.01	<10	<10	2	<10	<10	--	--
9434	1.21	0.6	<10	100	<0.5	<2	0.36	<0.5	15	110	61	2.43	<10	0.25	10	0.73	840	<1	0.03	9	880	<2	<10	9	<0.01	<10	<10	15	<10	30	--	--
9436	0.57	21.0	<10	80	<0.5	<2	0.80	<0.5	14	154	29	3.72	<10	0.09	10	0.14	872	35	0.01	12	260	<2	<10	16	0.03	<10	<10	30	<10	<10	--	--
9438	1.23	0.2	<10	20	<0.5	<2	1.12	<0.5	28	46	77	5.87	<10	0.06	20	0.91	657	1	0.13	24	1290	<2	<10	38	0.59	<10	<10	199	<10	90	--	--
9853	1.05	1.6	10	60	<0.5	2	4.03	<0.5	14	77	569	2.57	10	0.22	<10	0.72	1352	2	<0.01	6	600	2	<10	87	<0.01	<10	<10	12	<10	30	--	--
9854	1.40	1.4	10	60	<0.5	2	4.69	<0.5	15	33	528	2.92	20	0.24	<10	0.96	1444	1	<0.01	5	980	<2	<10	99	<0.01	<10	<10	15	<10	40	--	--
9855	1.85	0.2	10	50	<0.5	<2	4.05	<0.5	14	23	28	3.40	20	0.19	<10	1.29	1127	<1	0.01	4	890	<2	<10	51	<0.01	<10	<10	31	<10	60	--	--
9982	1.96	0.2	<10	90	<0.5	<2	0.59	<0.5	14	67	889	2.71	<10	0.16	10	1.28	765	1	0.03	9	1150	10	<10	15	0.12	<10	<10	44	<10	90	--	--
9983	0.60	18.6	<10	20	<0.5	2	0.10	0.5	10	177	>9999	4.91	<10	0.01	<10	0.43	203	4	0.02	10	540	8	<10	4	0.04	<10	<10	22	<10	50	--	--
10209	1.43	0.2	<10	120	<0.5	2	3.55	0.5	17	63	4506	5.07	10	0.26	<10	1.02	1217	<1	0.02	16	930	<2	<10	91	0.02	<10	<10	27	<10	50	--	--
10210	1.77	4.2	<10	70	<0.5	<2	1.79	<0.5	14	72	68	2.51	10	0.11	10	1.07	683	11	0.05	12	880	2	<10	140	0.16	<10	<10	42	<10	50	--	--
10218	1.60	0.2	<10	90	<0.5	<2	2.33	<0.5	16	105	782	3.16	10	0.18	10	1.09	901	13	0.02	23	780	2	<10	100	0.08	<10	<10	21	<10	50	--	--
10219	1.60	1.0	<10	90	<0.5	<2	2.33	<0.5	16	104	781	3.15	10	0.18	10	1.08	899	13	0.02	22	730	4	<10	100	0.08	<10	<10	31	<10	50	--	--
10610	0.93	4.0	<10	60	<0.5	2	2.52	<0.5	11	109	1613	2.61	10	0.11	10	0.75	635	1	0.01	11	600	26	<10	52	0.01	<10	<10	18	<10	80	--	--
10625	1.18	0.2	10	80	<0.5	<2	4.38	<0.5	13	70	14	2.19	20	0.19	<10	1.14	1496	3	0.01	15	830	20	<10	121	0.03	<10	<10	23	<10	70	--	--
12492	0.95	2.6	10	70	<0.5	2	3.19	0.5	43	72	5902	3.21	10	0.19	<10	0.86	1522	19	0.01	10	810	<2	<10	77	0.02	<10	<10	16	<10	40	--	--
12497	0.90	0.2	10	60	<0.5	<2	2.37	<0.5	9	102	75	1.72	10	0.17	<10	0.63	901	2	0.01	9	600	<2	<10	58	<0.01	<10	<10	13	<10	20	--	--
12499	1.39	1.8	10	70	<0.5	<2	3.93	<0.5	13	53	1607	2.91	10	0.21	<10	1.00	1335	3	0.01	12	980	<2	<10	111	<0.01	<10	<10	19	<10	40	--	--
12508	1.49	1.2	10	80	<0.5	<2	4.64	<0.5	17	40	102	2.06	20	0.19	<10	1.13	1344	1	<0.01	9	1050	4	<10	46	<0.01	<10	<10	18	<10	50	--	--
12510	0.97	3.3	<10	<10	<0.5	<2	2.72	2.5	109	71	40	22.40	10	0.17	<10	0.65	991	1	<0.01	29	960	<2	<10	46	<0.01	<10	<10	5	<10	20	--	--
7646	1.20	0.4	10	90	<0.5	<2	4.42	<0.5	17	65	112	2.23	20	0.16	<10	1.00	1197	3	<0.01	12	660	8	<10	107	<0.01	<10	<10	23	<10	30	--	--
8529	1.34	0.6	10	70	<0.5	<2	4.54	<0.5	15	101	391	2.89	20	0.19	<10	1.26	1120	<1	0.01	19	1320	2	<10	101	<0.01	<10	<10	29	<10	40	--	--
8630	1.47	0.2	10	80	<0.5	<2	4.67	<0.5	9	57	34	2.49	20	0.25	<10	1.04	1538	<1	0.01	7	990	2	<10	97	<0.01	<10	<10	25	<10	40	--	--
9442	1.44	0.2	<10	80	<0.5	<2	2.38	<0.5	9	101	4	2.52	10	0.18	10	1.02	673	5	0.02	17	870	2	<10	84	<0.01	<10	<10	21	<10	40	--	--
9443	0.16	1.0	<10	10	<0.5	<2	0.07	<0.5	53	193	12	1.33	<10	<0.01	<10	0.11	169	20	<0.01	14	50	<2	<10	3	<0.01	<10	<10	3	<10	<10	--	--
9319	1.82	4.8	<10	110	<0.5	<2	0.64	<0.5	17	122	64	2.56	<10	0.26	10	1.20	712	<1	0.04	21	910	4	<10	19	<0.01	<10	<10	41	<10	70	--	--
9820	1.33	0.4	<10	110	<0.5	<2	0.64	<0.5	12	130	55	2.95	<10	0.23	10	0.99	803	<1	0.05	9	1020	4	<10	17	0.14	<10	<10	45	<10	60	--	--
9824	1.44	2.0	10	60	<0.5	2	10.45	<0.5	14	84	580	2.73	30	0.13	<10	1.10	2369	1	<0.01	22	540	10	<10	330	0.04	<10	<10	23	<10	30	--	--
9888	0.02	6.0	<10	20	<0.5	<2	0.03	1.0	42	157	8551	5.43	<10	<0.01	<10	0.01	33	7	<0.01	20	210	28	<10	1	<0.01	<10	<10	<1	<10	30	--	--
9889	1.96	0.6	<10	80	<0.5	<2	3.55	<0.5	17	112	640	3.12	10	0.19	<10	1.95	1499	<1	0.01	33	670	28	<10	80	0.01	<10	<10	40	<10	60	--	--
9987	0.07	3.0	<10	20	<0.5	<2	0.02	0.5	30	205	2019	6.22	<10	<0.01	<10	0.04	175	2	<0.01	15	70	2	<10	1	<0.01	<10	<10	5	<10	20	--	--
9989	1.50	0.4	<10	110	<0.5	<2	2.14	<0.5	12	64	21	2.96	10	0.15	10	1.16	986	<1	0.03	11	1110	4	<10	37	0.06	<10	<10	41	<10	70	--	--
9992	0.95	1.4	<10	60	<0.5	<2	1.35	<0.5	11	101	1492	2.57	<10	0.14	<10	0.64	618	<1	0.02	9	900	2	<10	22	0.02	<10	<10	22	<10	40	--	--
9994	0.05	3.4	<10	<10	<0.5	<2	0.25	1.0	72	143	1936	8.06	<10	<0.01	<10	0.06	138	2	<0.01	26	50	<2	<10	8	<0.01	<10	<10	<1	<10	10	--	--
9996	1.94	0.4	<10	80	<0.5	<2	2.31	<0.5	15	60	803	3.12	10	0.21	10	1.37	1277	<1	0.01	14	1030	2	<10	71	0.05	<10	<10	27	<10	50	--	--
10204	0.12	0.2	10	300	<0.5	<2	2.34	<0.5	4	265	27	1.30	10	0.02	<10	0.40	2255	1	<0.01	8	90	4	<10	23	<0.01	<10	<10	5	<10	10	--	--
10206	0.97	4.2	<10	40	<0.5	<2	2.13	1.0	43	52	3646	11.23	10	0.24	10	0.57	824	<1	0.01	19	980	<2	<10	41	<0.01	<10	<10	19	<10	30	--	--

Certified by ....

Chemex Labs Ltd.

•Analytical Chemists •Geochemists •Registered Assayers

212 Brooksbank Ave.
North Vancouver, B.C.
Canada V7J 2C1
Telephone:(604) 984-0221
Telex: 043-52597

DUPLICATE

CERTIFICATE OF ANALYSIS

TO : TRM ENGINEERING LTD.

701 - 744 W. HASTINGS ST.
VANCOUVER, B.C.
V6C 1A5

CERT. # : A8612944-002-A
INVOICE # : I8612944
DATE : 23-JUN-86
P.O. # : NONE

Semi quantitative multi element ICP analysis

Nitric-Aqua-Regia digestion of 0.5 gm of material followed by ICP analysis. Since this digestion is incomplete for many minerals, values reported for Al, Sb, Ba, Be, Ca, Cr, Ga, La, Mg, K, Na, Sr, Tl, Ti, W and V can only be considered as semi-quantitative.

COMMENTS :
ATTN: MURRAY McCLAREN CC: J. E. HARRIS

Sample description	Al %	Ag ppm	As ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	K %	La ppm
10229	1.22	3.4	<10	60	<0.5	<2	0.95	<0.5	11	32	866	3.52	<10	0.12	10
10234	1.78	0.4	<10	110	<0.5	<2	2.37	<0.5	15	47	63	3.66	10	0.15	10
10233	1.27	0.4	10	70	<0.5	<2	2.51	<0.5	14	31	119	2.92	10	0.20	<10
10606	1.10	0.6	<10	90	<0.5	<2	2.29	2.5	9	113	534	1.95	10	0.15	10
10626	1.07	2.9	<10	70	<0.5	<2	1.34	0.5	42	110	1505	6.22	10	0.17	10
10633	0.18	0.4	<10	20	<0.5	<2	1.08	<0.5	5	180	7	0.62	<10	0.03	<10
10644	0.95	1.8	10	70	<0.5	<2	5.42	<0.5	17	35	15	2.45	20	0.22	<10
12500	1.15	1.8	<10	80	<0.5	2	2.93	<0.5	36	80	2594	4.60	10	0.22	<10
12526	0.56	0.4	20	110	<0.5	<2	12.48	0.5	16	12	25	4.54	30	0.16	<10
12537	0.39	2.4	<10	90	<0.5	<2	1.92	0.5	42	30	450	8.61	10	0.16	10

Sample description	Mg %	Mn ppm	Mo ppm	Na %	Ni ppm	P ppm	Pb ppm	Sb ppm	Sr ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm		
10229	0.88	630	1	0.02	16	600	2	<10	94	0.01	<10	<10	29	<10	40	--	--
10234	1.30	929	<1	0.06	5	1090	<2	<10	57	0.15	<10	<10	67	<10	70	--	--
10233	1.25	1146	1	0.02	8	960	4	<10	115	0.12	<10	<10	35	<10	60	--	--
10606	0.86	654	3	0.02	10	630	300	<10	55	0.01	<10	<10	21	<10	610	--	--
10626	0.77	596	92	0.02	15	760	18	<10	48	0.02	<10	<10	20	<10	80	--	--
10633	0.11	380	4	<0.01	6	60	6	<10	25	<0.01	<10	<10	2	<10	10	--	--
10644	1.05	2471	<1	0.01	9	1100	4	<10	134	<0.01	<10	<10	9	<10	30	--	--
12500	0.77	1189	73	0.01	15	670	2	<10	52	0.01	<10	<10	16	<10	30	--	--
12526	2.32	8380	6	<0.01	10	770	14	10	92	<0.01	<10	<10	25	<10	20	--	--
12537	0.32	812	2	0.02	44	700	<2	<10	34	<0.01	<10	<10	12	<10	10	--	--

Certified by ....

APPENDIX VI-C(iv)

Analytical Results for Progress Report 4

Chemex Labs Ltd.

Analytical Chemists •• *Geochemists* •• *Registered Assayers*

212 Brooksbank Ave.
North Vancouver, B.C.
Canada V7J 2C1

Phone: (604) 984-0221
Telex: 043-52597

CERTIFICATE OF ANALYSIS

TO : TRM ENGINEERING LTD.

701 - 744 W. HASTINGS ST.
VANCOUVER, B.C.
V6C 1A5

CERT. # : A8616432-001-A
INVOICE # : I8616432
DATE : 12-AUG-86
P.O. # : NONE
SURF HALO

ATTN: MURRAY McCLAREN CC: J.F. HARRIS

Sample description	Prep code	Hg ppb	Te ppm	Au ppb FA+AA			
A	214	510	10.50	1900	--	--	--
B	214	250	1.00	450	--	--	--
C	214	130	10.00	2300	--	--	--
D	214	1100	135.00	<10000	--	--	--
E	214	50	2.35	3450	--	--	--
F	214	410	43.00	<10000	--	--	--
G	214	200	4.00	2700	--	--	--
H	214	1300	210.00	<10000	--	--	--
J	214	100	4.00	2550	--	--	--

VOI rev. 4/85

Certified by HartBichler

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Analytical Chemists • Geochemists • Registered Assayers

212 Brooksbank Ave.
North Vancouver, B.C.
Canada V7J 2C1
Phone: (604) 984-0221
Telex: 043-52597

CERTIFICATE OF ASSAY

TO : TRM ENGINEERING LTD.

701 - 744 W. HASTINGS ST.
VANCOUVER, B.C.
V6C 1A5

ATTN: M. McLAREN CC: J. HARRIS

CERT. # : A8616361-001-A
INVOICE # : I8616361
DATE : 17-AUG-86
P.O. # : NONE
SURF HALO

Sample description	Prep code	Au oz/T					
D	214	3.652	--	--	--	--	--
F	214	1.412	--	--	--	--	--
H	214	3.920	--	--	--	--	--

VOI rev. 4/85

Annie Christie
Registered Assayer, Province of British Columbia

Chemex Labs Ltd.

212 Brooksbank Ave.
North Vancouver, B.C.
Canada V7J 2C1

•Analytical Chemists •Geochemists •Registered Assayers

Telephone:(604) 984-0221
Telex: 043-52597

CERTIFICATE OF ANALYSIS

TO : TRM ENGINEERING LTD.

701 - 744 W. HASTINGS ST.
VANCOUVER, B.C.
V6C 1A5

CERT. # : A8615845-001-A
INVOICE # : I8615845
DATE : 13-AUG-86
P.O. # : NONE
SURF HALO

Semi quantitative multi element ICP analysis

Nitric-Aqua-Regia digestion of 0.5 gm of material followed by ICP analysis. Since this digestion is incomplete for many minerals, values reported for Al, Sb, Ba, Be, Ca, Cr, Ga, La, Mg, K, Na, Sr, Tl, Ti, W and V can only be considered as semi-quantitative.

COMMENTS :
ATTN: MURRAY McCLAREN CC: J.F. HARRIS

Sample description	Al %	Ag ppm	As ppm	Ba ppm	Be ppm	Bi ppm	Ca %	Cd ppm	Co ppm	Cr ppm	Cu ppm	Fe %	Ga ppm	K %	La ppm	Mg %	Mn ppm	Mo ppm	Na %	Ni ppm	P ppm	Pb ppm	Sb ppm	Sr ppm	Ti %	Tl ppm	U ppm	V ppm	W ppm	Zn ppm		
A	0.12	39.4	<10	10	<0.5	8	0.38	7.5	46	105	>9999	21.37	<10	<0.01	<10	0.37	162	1	<0.01	54	<10	6	10	9	<0.01	<10	<10	<1	<10	126	--	--
B	0.02	12.6	<10	<10	<0.5	10	0.03	1.0	5	492	>9999	2.86	<10	<0.01	<10	0.01	36	5	<0.01	10	<10	6	<10	3	<0.01	<10	<10	7	<10	16	--	--
C	0.07	2.4	30	10	<0.5	<2	0.02	<0.5	6	135	292	1.13	<10	0.02	<10	0.11	24	115	<0.01	8	10	4	<10	2	<0.01	<10	<10	2	<10	9	--	--
D	0.08	119.0	<10	10	<0.5	<2	0.01	<0.5	92	238	571	25.17	<10	0.02	<10	0.02	10	252	<0.01	56	<10	<2	<10	<1	<0.01	<10	<10	<1	<10	<2	--	--
E	0.11	2.0	<10	30	<0.5	<2	0.79	<0.5	29	195	>9999	7.16	<10	<0.01	<10	0.07	287	9	<0.01	20	<10	4	<10	11	<0.01	<10	<10	<1	<10	<2	--	--
F	0.02	40.0	<10	<10	<0.5	<2	0.02	<0.5	105	224	2459	24.97	<10	<0.01	<10	0.02	16	117	<0.01	36	<10	<2	<10	1	<0.01	<10	<10	<1	<10	<2	--	--
G	0.07	13.2	<10	20	<0.5	<2	0.01	0.5	36	262	>9999	12.68	<10	0.02	<10	0.01	20	10	<0.01	41	<10	<2	<10	<1	<0.01	<10	<10	<1	<10	24	--	--
H	0.02	172.0	<10	<10	<0.5	<2	0.04	<0.5	127	307	>9999	25.33	<10	<0.01	<10	0.03	13	208	<0.01	31	<10	<2	<10	1	<0.01	<10	<10	<1	<10	<2	--	--
J	0.06	16.6	<10	10	<0.5	<2	1.61	<0.5	24	523	7146	4.55	<10	<0.01	<10	0.02	364	2	<0.01	13	<10	8	<10	50	<0.01	<10	<10	<1	<10	4	--	--

Certified by ....

APPENDIX VII

Mining

(NTS 103H/2W)

K-Ar

Sample Number(s) and Reference(s)

Lab No: DY 3076

Ref: M. McLaren, TRM Engineering Ltd #701-744 W. Hastings St. Van. B.C. V6C 1A5

Record No:

Suite No:

decay constants:	material	Date	1σ error
☐ 4.72/.584/1.19	(W. Rx.)	80.1	± 2.8 Ma
☐ 4.72/.584/1.18	( )		± Ma
■ 4.96/.581/1.167	( )		± Ma
☐ not reported	( )		± Ma

Sample Name: SURF INLET, B.C. Princess Royal Island.

Latitude: Longitude: (X° Y' Z" or X° Y.Y')

(° ' " N , ° ' " W (±);

UTM Zone ___ _____ E _____ N; Province B.C.

Sec.___, T.___, R.___; _____ Co., State _____.

(NTS _____) _____ Map Area, Scale _____

Location: COMINCO DDH 81-2

Source Type: Altered shear zone mineralization

Rock: Altered Intrusive

Geologic Unit: Coast Range Int. Complex.

Geologic Age:

Material Analyzed: Whole rock (-80+100)

Analytical Data: (list duplicate analyses or indicate n = 2, n = 3, etc.)

K = $\bar{X}$ = 4.03 ± 0.06 %; (Ar^{40*} = 12.820 $\times 10^{-6}$ cc/gm)
K_2O = n = 2 %; 5.720 $\times 10^{-10}$ mol/gm) ; (92.6 %ΣAr^{40})

K = %; (Ar^{40*} = $\times 10^{-6}$ cc/gm)
K_2O = %; $\times 10^{-10}$ mol/gm) ; (%ΣAr^{40})

K = %; (Ar^{40*} = $\times 10^{-6}$ cc/gm)
K_2O = %; $\times 10^{-10}$ mol/gm) ; (%ΣAr^{40})

K = %; (Ar^{40*} = $\times 10^{-6}$ cc/gm)
K_2O = %; $\times 10^{-10}$ mol/gm) ; (%ΣAr^{40})

Comment on Analyses:

Interpretation:

Collected by: Ken Dawson for M. McLaren.

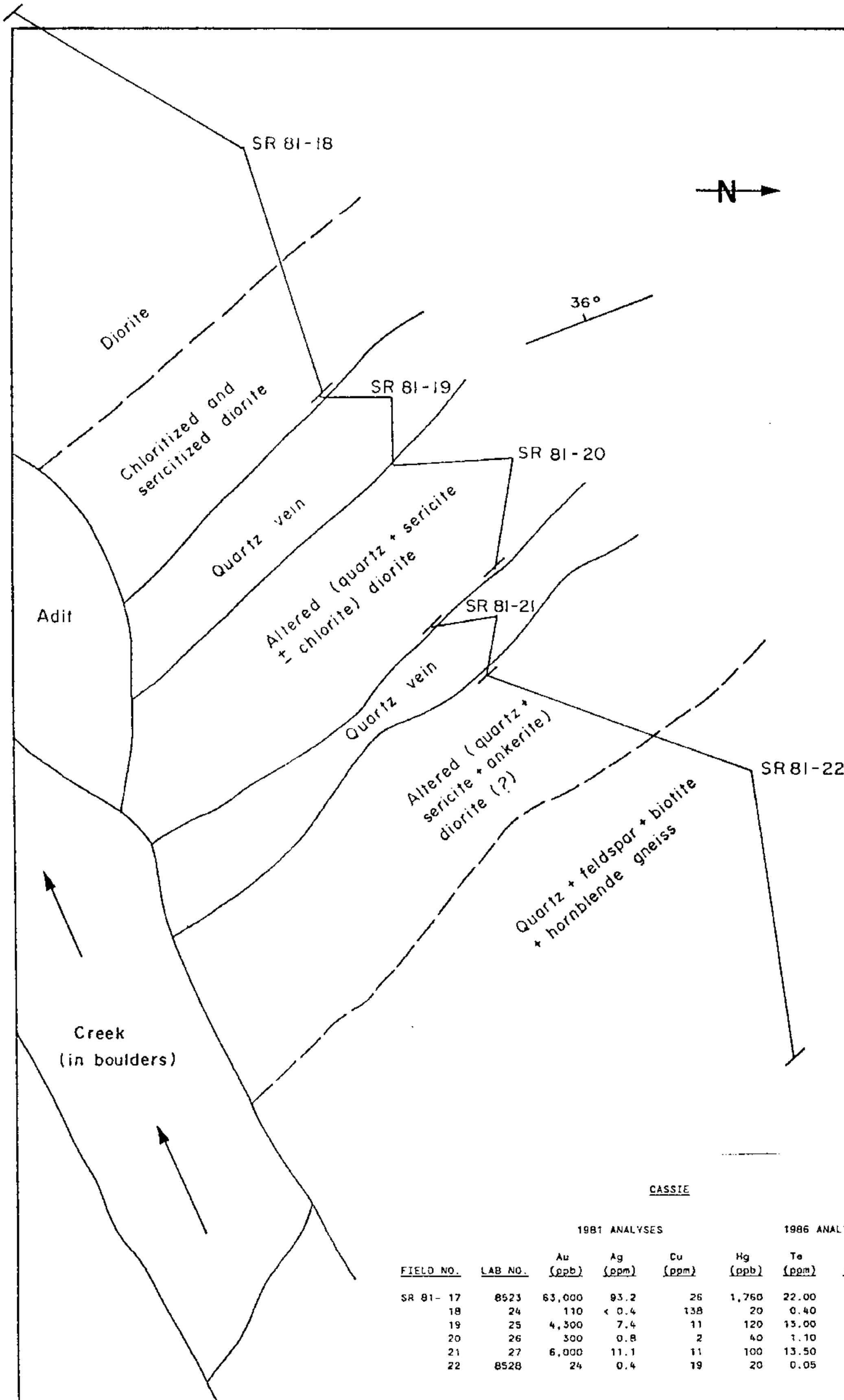
Dated by: J. Harakal & K. Scott

Listed by: _____ (name, institution) Date: 07.17.86

DESCRIPTION OF SAMPLE SUBMITTED FOR K-Ar DATING : DRILL CORE SAMPLE

DDH 81-2 depth 120-123.3m
Sericite altered Diorite Porphyry

MAPS



CASSIE

		1981 ANALYSES				1986 ANALYSES		
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 17	8523	63,000	93.2	26	1,760	22.00	--	--
18	24	110	< 0.4	138	20	0.40	< 1	< 2
19	25	4,300	7.4	11	120	13.00	--	--
20	26	300	0.8	2	40	1.10	--	--
21	27	6,000	11.1	11	100	13.50	2	< 2
22	8528	24	0.4	19	20	0.05	< 1	< 2

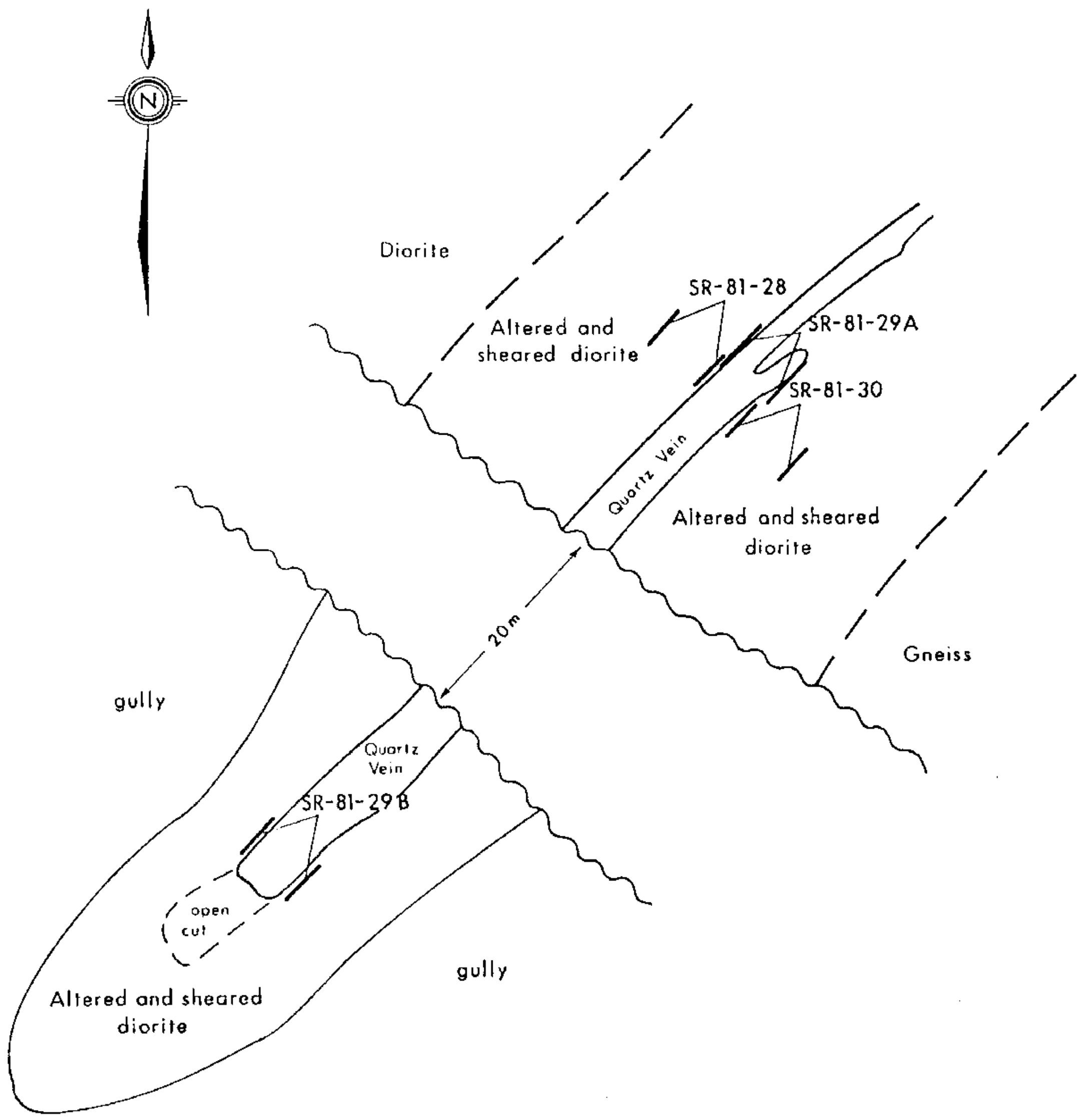
Note: The two quartz veins represent a splitting of the main quartz vein found in the adit.

SR 81-17' – Random samples from ore dump located south of adit entrance.

Drawn by: SJJ	Traced by: FJF	SURF INLET
Revised by / Date	Revised by / Date	GEOLOGY AND SAMPLE LOCATION CASSIE SHOWING
Scale: 0 — 0.25m	Date: AUG. 25, 1981	Plate: 4

NCI · 112A · CL

210-0610



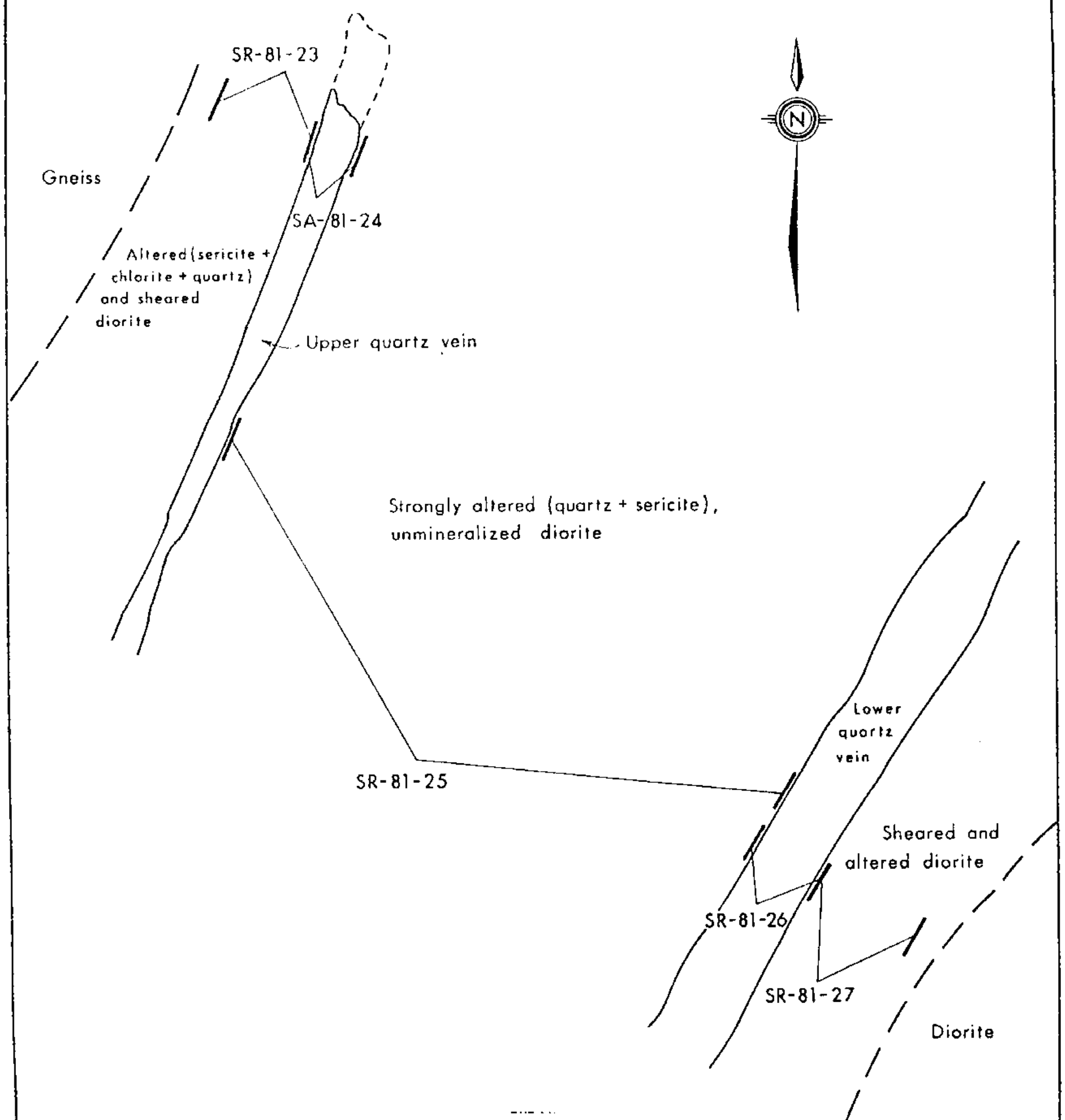
SUMMIT

FIELD NO.	LAB NO.	1981 ANALYSES Au (ppb)	Ag (ppm)	Cu (ppm)	1986 ANALYSES Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 28	9431	170	< 0.4	18	60	0.60	--	--
29A	9432	6,670	14.5	152	260	15.00	1	< 1
29B	9433	1,760	3.7	15	170	6.00	--	--
30	9434	380	1.0	63	40	1.35	< 1	< 2

Drawn by: S.J.J.	Traced by: H.H.	SURF INLET GEOLOGY and SAMPLE LOCATION SUMMIT SHOWING	
Revised by / Date	Revised by / Date		
Scale: 0 1 2m		Date: SEPT. 1981	Plate: 5

NCI - 112A - CL

210-0610



BONANZA

		1981 ANALYSES			1986 ANALYSES			
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 23	8617	238	1.0	25	20	26.00	< 1	< 2
24	18	4,020	36.9	10,780	240	13.50	4	< 2
25	19	90	1.2	70	90	9.00	< 1	< 2
26	20	12,800	86.0	17,200	4,600	32.50	--	--
27	21	156	1.2	252	60	1.50	--	--

Drawn by: S.J.J. | Traced by: H.H.

Revised by | Date | Revised by | Date

SURF INLET

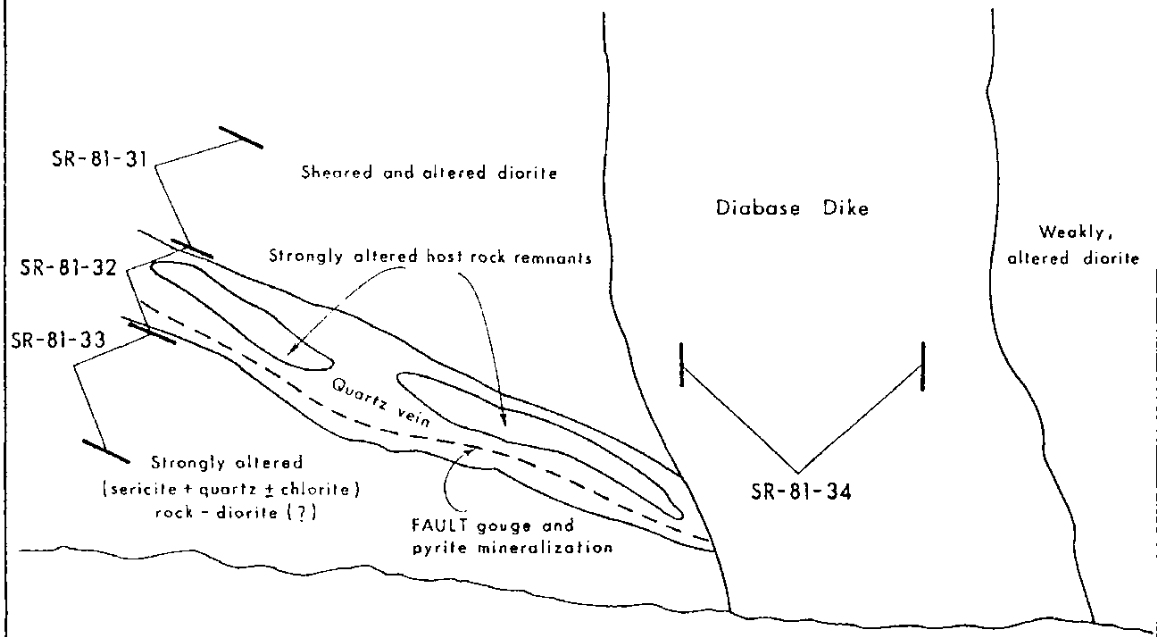
GEOLOGY and SAMPLE LOCATION

BONANZA SHOWING

Scale: 0 1 2m | Date: SEPT. 1981 | Plate: 6

NCI - 112A - CL

210-0610



NOTE: SECTION IS OF A BLUFF FACE, LOOKING SOUTH

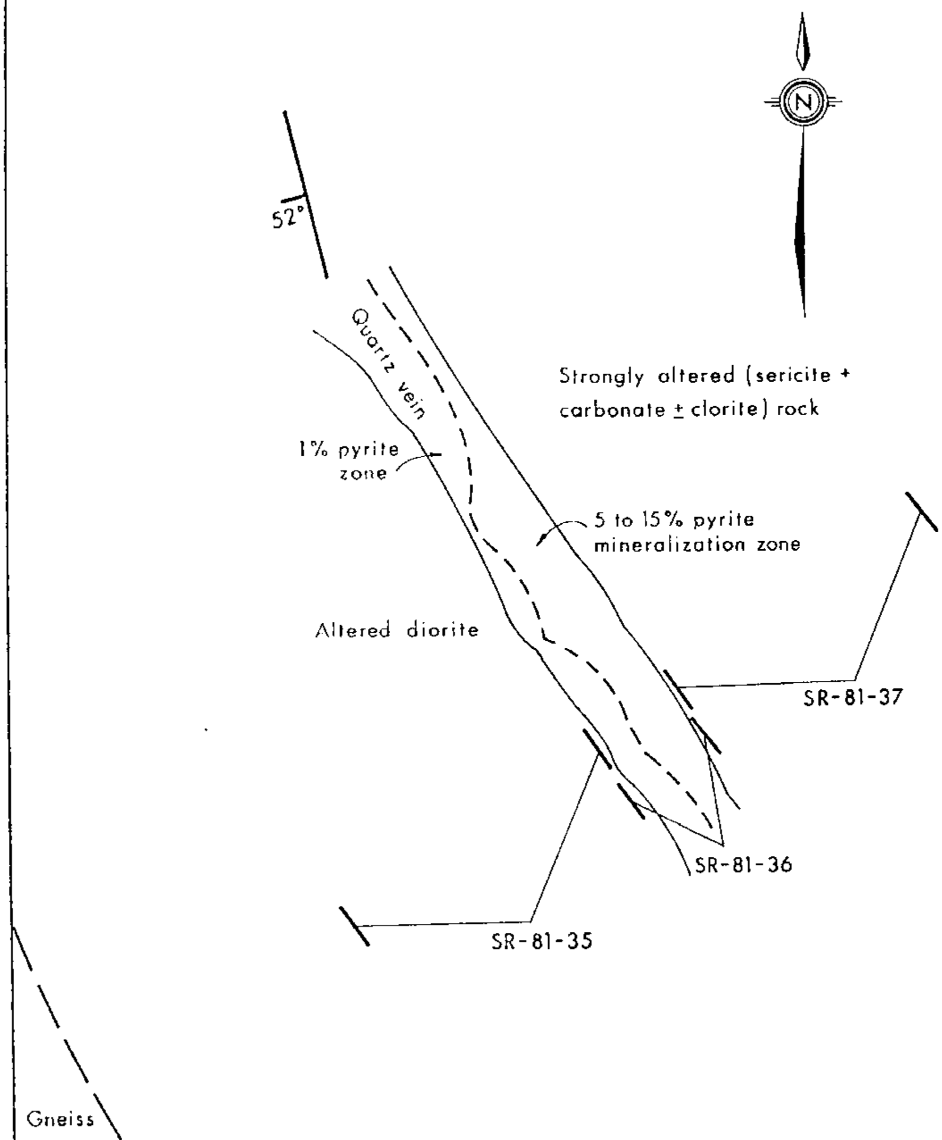
DIABASE

		1981 ANALYSES			1986 ANALYSES			
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 31	9435	22	< 0.4	48	20	0.10	--	--
32	36	4,400	24.4	28	100	15.00	35	< 2
33	37	60	2.0	47	20	0.30	--	--
34	38	74	0.6	71	40	0.50	1	< 2

Drawn by: S.J.J.	Traced by: H.H.	SURF INLET GEOLOGY and SAMPLE LOCATION DIABASE SHOWING	
Revised by	Date	Revised by	Date
Scale: 0 0.5 1m	Date: SEPT. 1981	Plate: 7	

NCI - 112A - CI

210-0610



HW SHEAR E OF DDH81-1

		1981 ANALYSES			1986 ANALYSES			
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 35	9439	104	0.4	337	40	0.50	--	--
36	40	4230	13.7	185	230	5.00	--	--
37	41	40	< 0.4	54	40	0.10	--	--

Drawn by: S.J.J. | Traced by: H.H. | Revised by | Date | Revised by | Date

SURF INLET

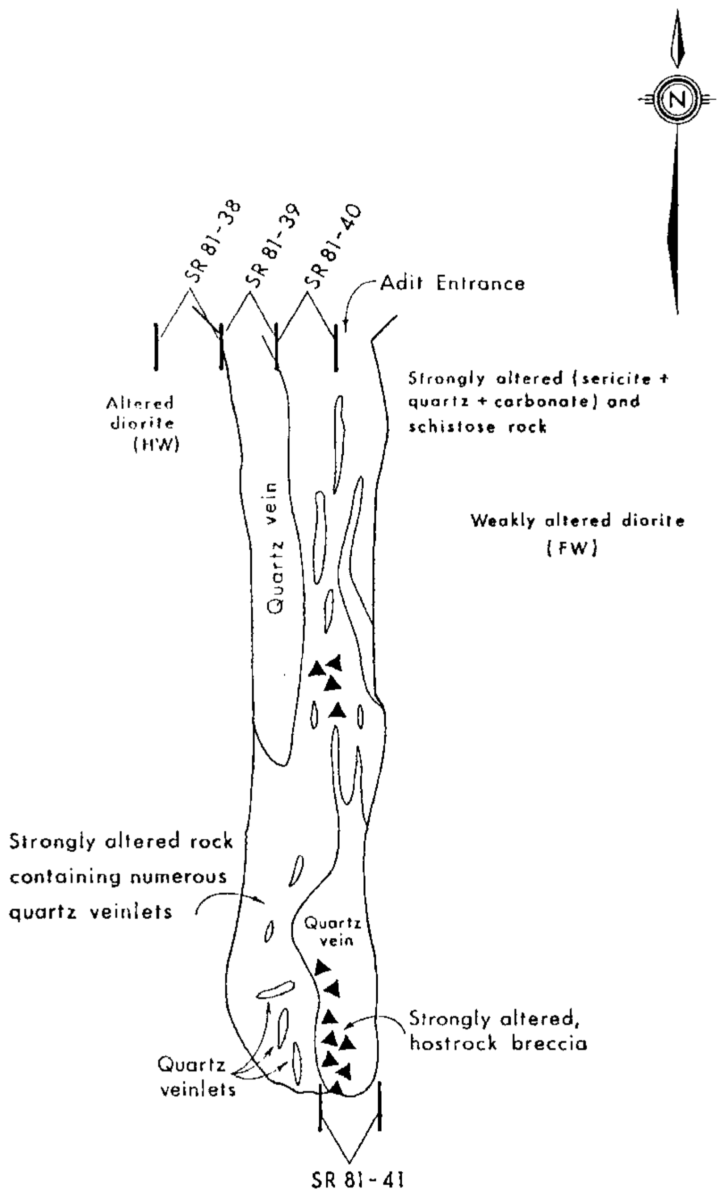
GEOLOGY and SAMPLE LOCATION

HW Shear, East of DDH 81-1

Scale: 0 — 0.5m | Date: SEPT. 1981 | Plate: 8

NCI-112A-CL

210-0610



ANACONDA

		1981 ANALYSES			1986 ANALYSES			
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 38	9442	20	< 0.4	8	180	0.10	5	2
39	9443	230	1.3	13	80	1.00	20	< 2
40	9444	10	< 0.4	6	30	0.05	--	--
41		40	< 0.4	10	--	--	--	--

Drawn by: S.J.J.	Traced by: H.H.
Revised by / Date	Revised by / Date

SURF INLET

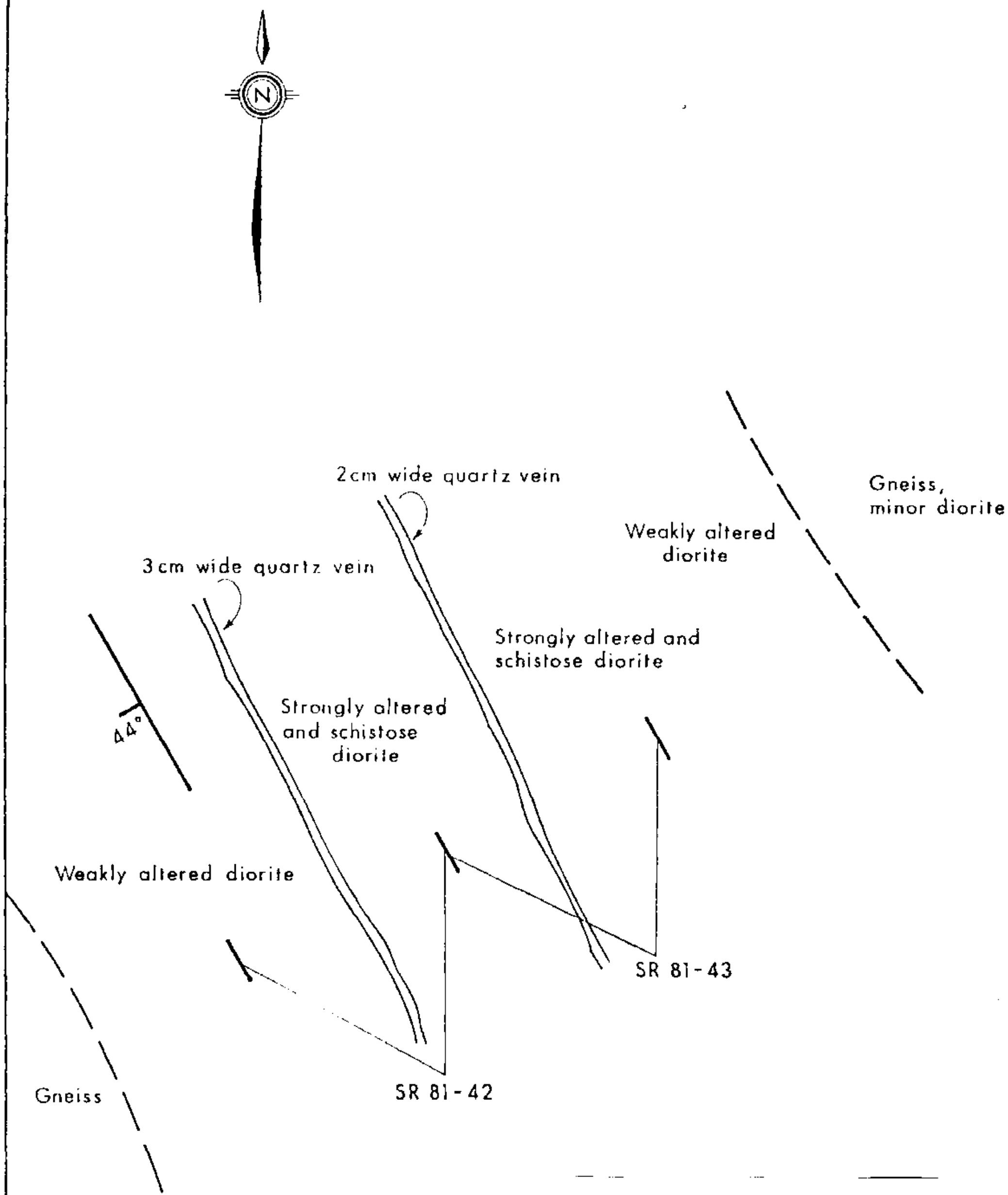
GEOLOGY and SAMPLE LOCATION

ANACONDA ADIT

Scale: 0 1 2m | Date: SEPT. 1981 | Plate: 9

NCI - 112A - CL

210-0610



HW SHEAR E OF DDH-2

		1981 ANALYSES			1986 ANALYSES			
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 42	9446	< 10	< 0.4	21	20	<0.05	--	--
43	47	< 10	< 0.4	14	20	0.05	--	--

Drawn by: S.J.J.	Traced by: H.H.
Revised by / Date	Revised by / Date

SURF INLET

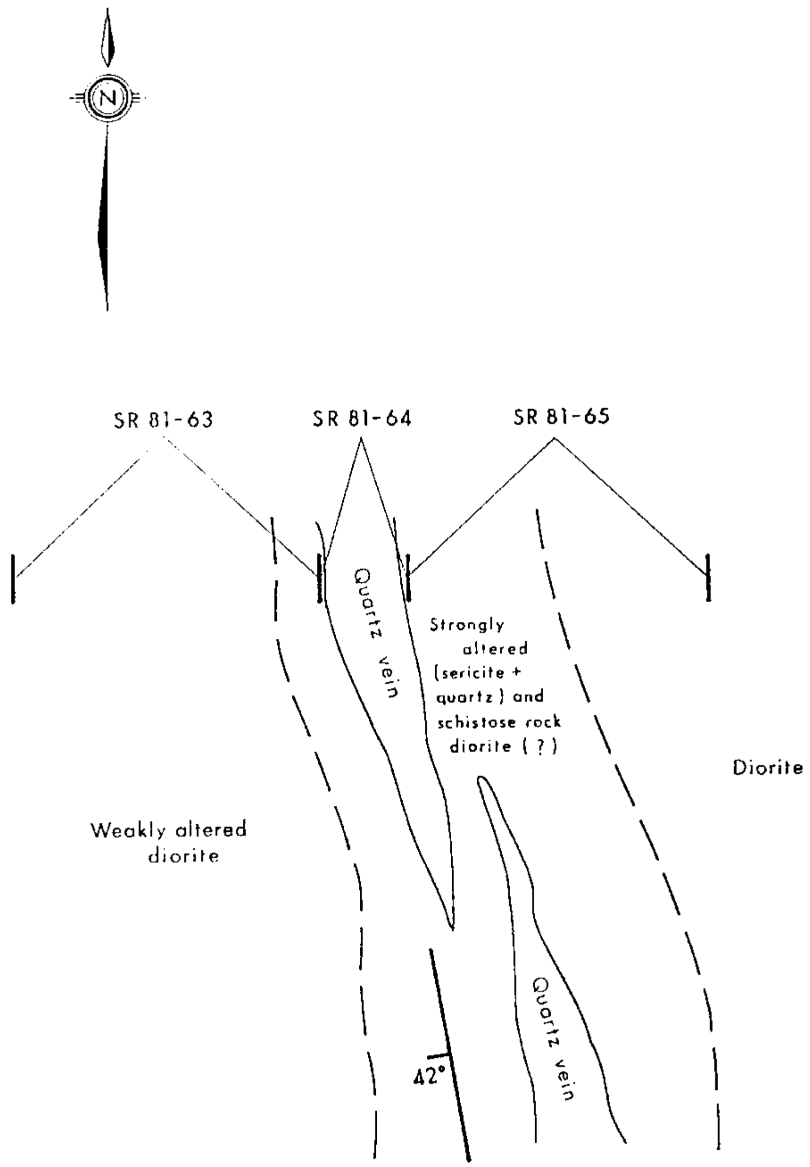
GEOLOGY and SAMPLE LOCATION

HW Shear, East of DDH 81-2

Scale: 0 0.5 1m | Date: SEPT. 1981 | Plate: 10

NCI-112A-CL

210-0610



INDEPENDENCE A

FIELD NO.	LAB NO.	1981 ANALYSES Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	1986 ANALYSES Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 63	9874	10	< 0.4	12	20	0.05	--	--
64	75	< 10	< 0.4	3	20	0.05	--	--
65	76	< 10	< 0.4	9	10	< 0.05	--	--

Drawn by: S.J.J.	Traced by: H.H.
Revised by / Date	Revised by / Date

SURF INLET

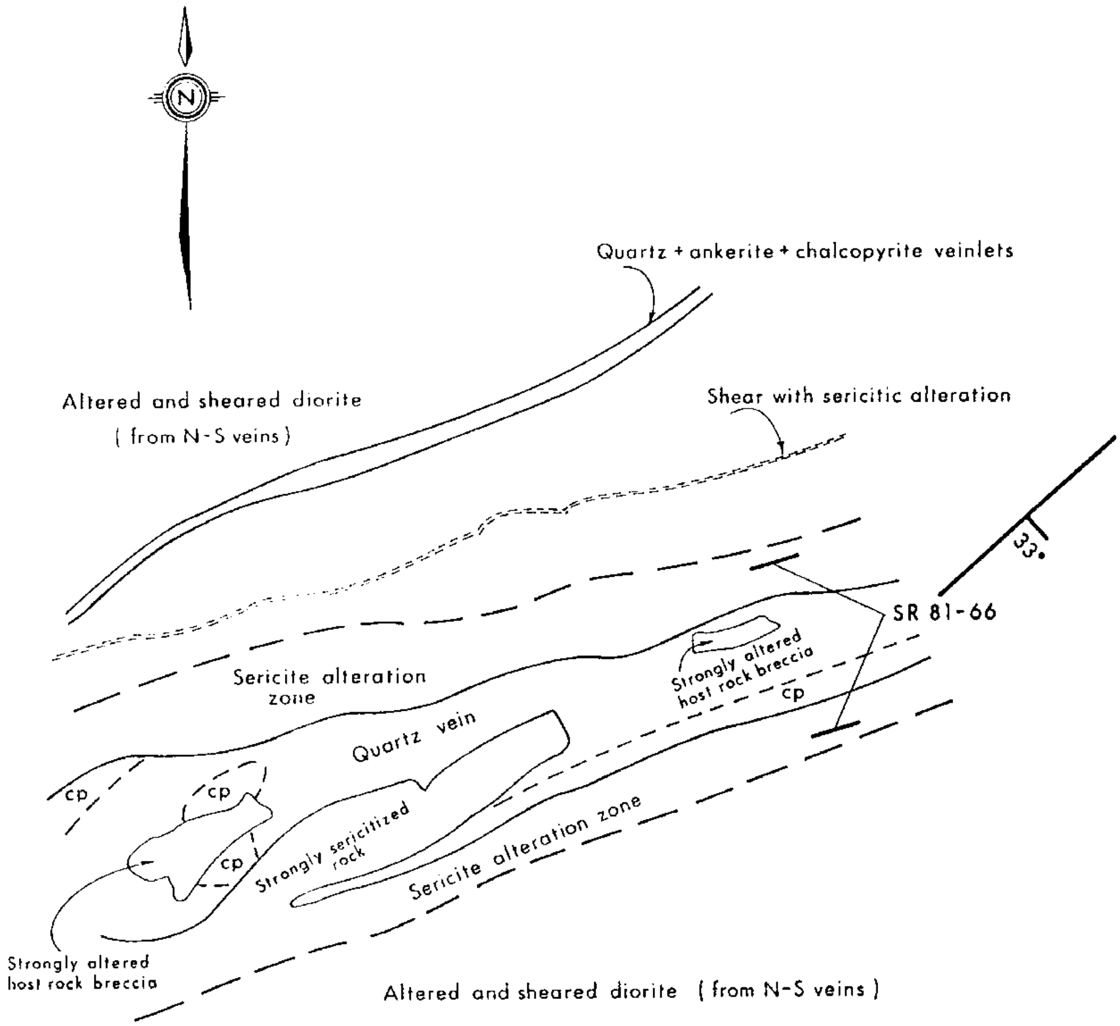
GEOLOGY and SAMPLE LOCATION

INDEPENDENCE SHOWING – A

Scale: 0 — 0.5m | Date: SEPT. 1981 | Plate: 11- A

NCI - 112A - CL

210-0610



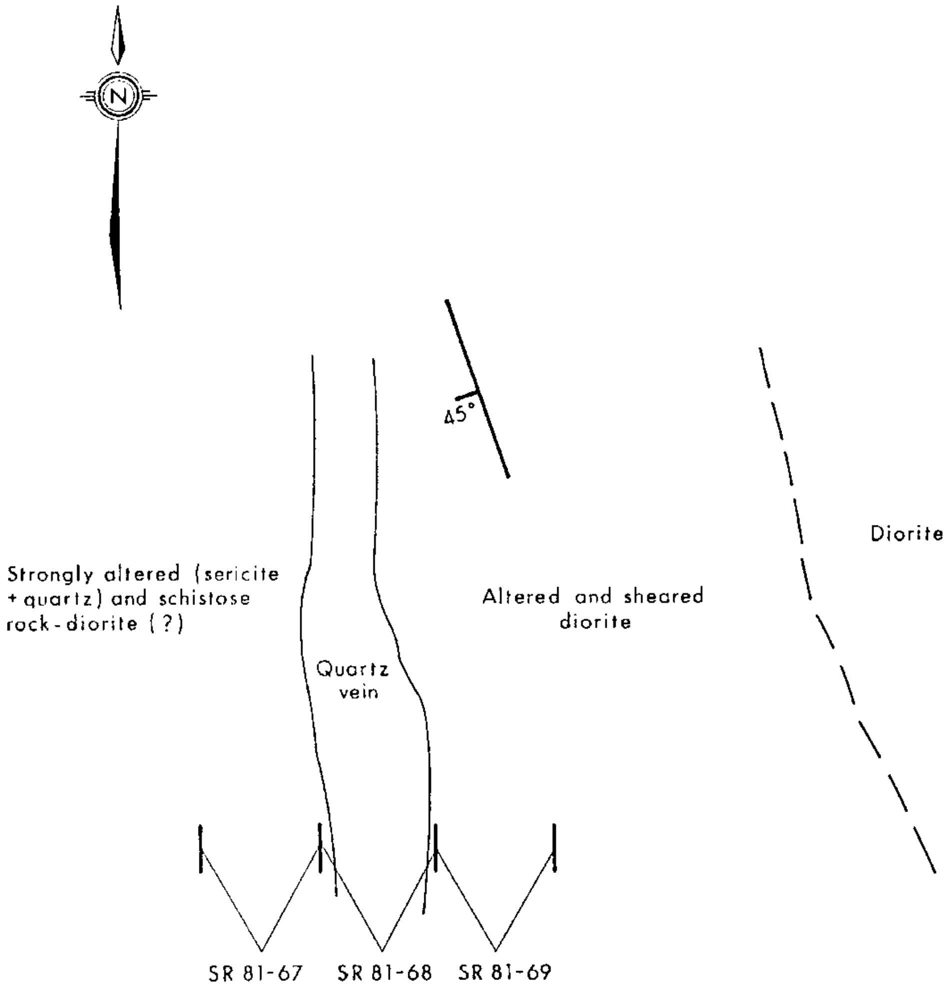
INDEPENDENCE B

		1981 ANALYSES			1986 ANALYSES			
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 66	9877	460	3.6	9,350	40	2.4	--	--

Drawn by: S.J.J.	Traced by: H.H.	SURF INLET GEOLOGY and SAMPLE LOCATION INDEPENDENCE SHOWING – B
Revised by / Date	Revised by / Date	Scale: 0 — 0.25m; Date: SEPT. 1981; Plate: 11-B

NCI - 112A - CL

210-0610



INDEPENDENCE C

		1981 ANALYSES			1986 ANALYSES			
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 67	9878	50	< 0.4	14	10	0.05	--	--
68	79	10	< 0.4	30	20	0.05	--	--
69	80	40	< 0.4	6	10	< 0.05	--	--

Drawn by: S.J.J.	Traced by: H.H.
Revised by / Date	Revised by / Date

SURF INLET

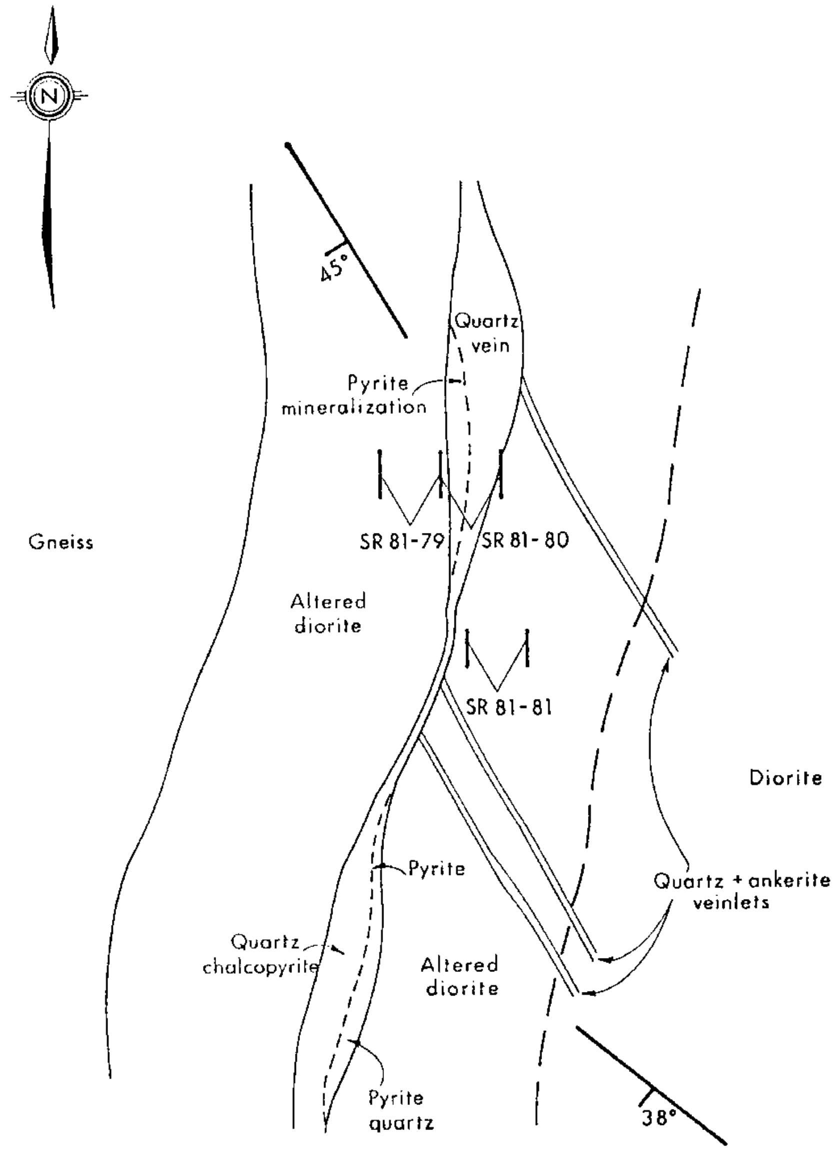
GEOLOGY and SAMPLE LOCATION

INDEPENDENCE SHOWING — C

Scale: 0 0.5 1 m | Date: SEPT. 1981 | Plate: 11-C

NCI - 112A - CL

210-0610



SADIE'S CREEK
195 m ELEV.

		1981 ANALYSES			1986 ANALYSES			
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 79	9976	< 10	< 0.4	14	100	0.05	--	--
80	77	19,000	10.0	403	200	13.50	--	--
81	78	100	< 0.4	47	40	0.25	--	--

Drawn by: S.J.J.	Traced by: H.H.
Revised by / Date	Revised by / Date

SURF INLET

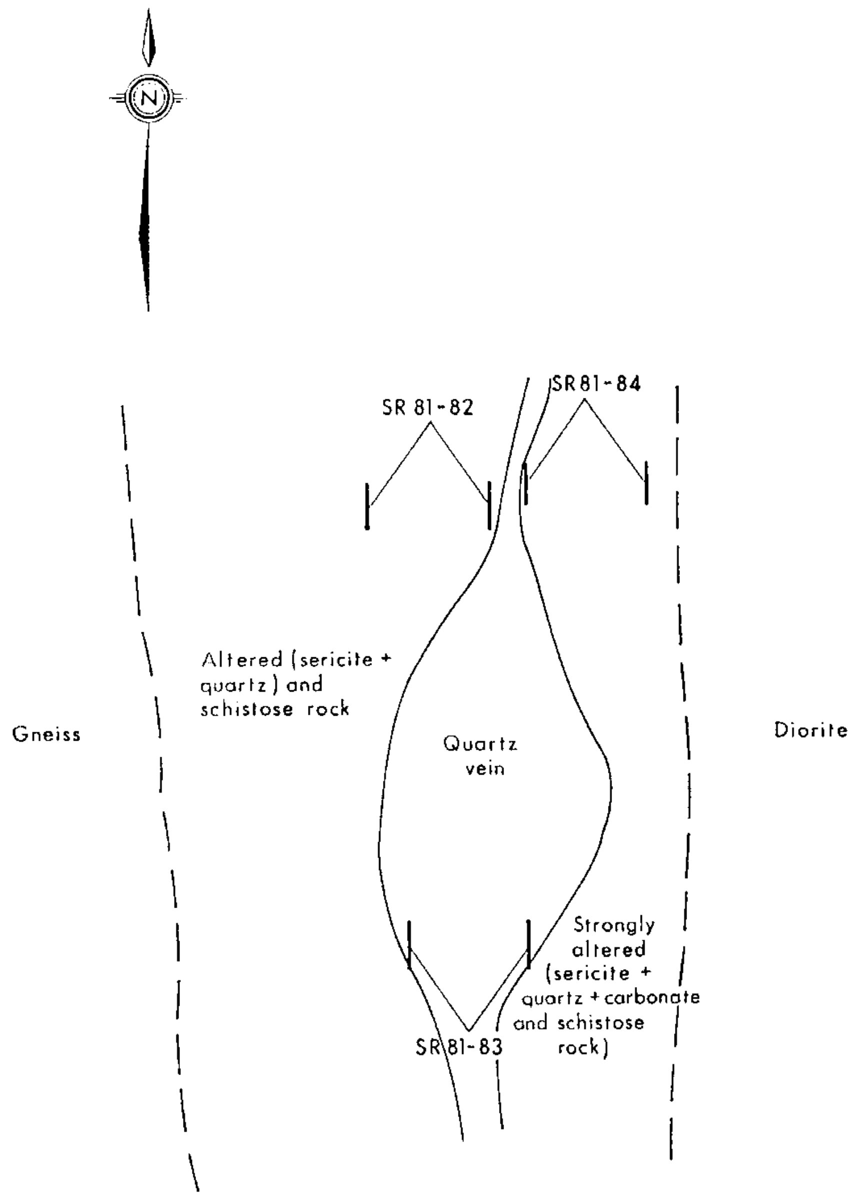
GEOLOGY and SAMPLE LOCATION

SADIE'S CREEK SHOWINGS – 195m el.

Scale: 0 1 2m | Date: SEPT. 1981 | Plate: 12

NCI 112A · CL

210-0610



SADIE'S CREEK
165 m ELEV.

		1981 ANALYSES			1986 ANALYSES			
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 82	9979	70	< 0.4	32	20	0.20	--	--
83	80	12,000	2.9	42	80	13.30	--	--
84	81	200	< 0.4	44	40	0.75	--	--

Drawn by: S.J.J.	Traced by: H.H.
Revised by / Date	Revised by / Date

SURF INLET

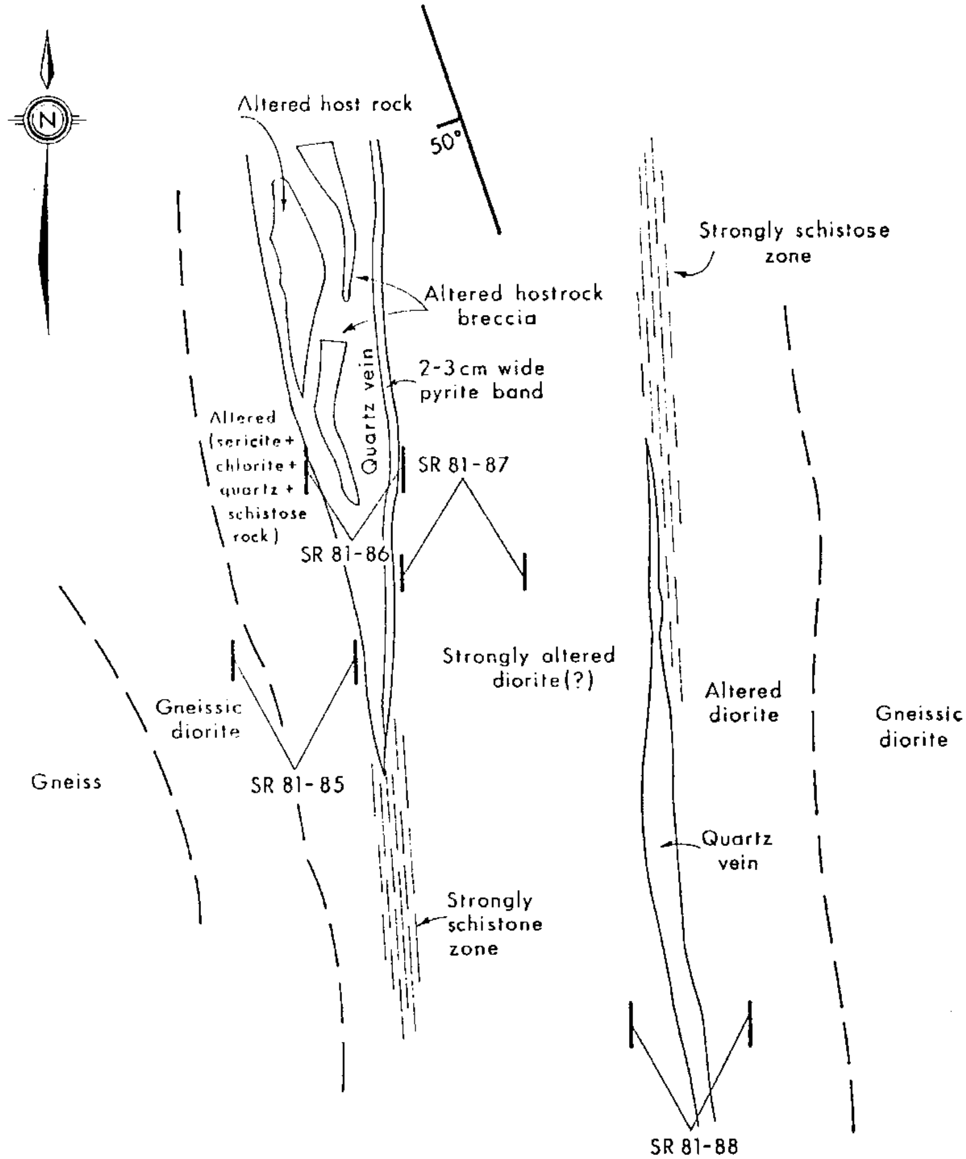
GEOLOGY and SAMPLE LOCATION

SADIE'S CREEK SHOWINGS – 165m el.

Scale: 0 0.5 1m | Date: SEPT. 1981 | Plate: 13

NCI 112A CL

210-0610



SADIE'S CREEK
145 m ELEV.

		1981 ANALYSES			1986 ANALYSES			
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 85	9982	400	< 0.4	782	20	3.10	1	10
86	83	45,000	15.1	10,200	240	33.00	4	8
87	84	80	< 0.4	549	40	0.40	--	--
88	85	1,340	< 0.4	450	40	2.45	--	--

Drawn by: S.J.J. Traced by: H.H.

Revised by | Date | Revised by | Date

SURF INLET

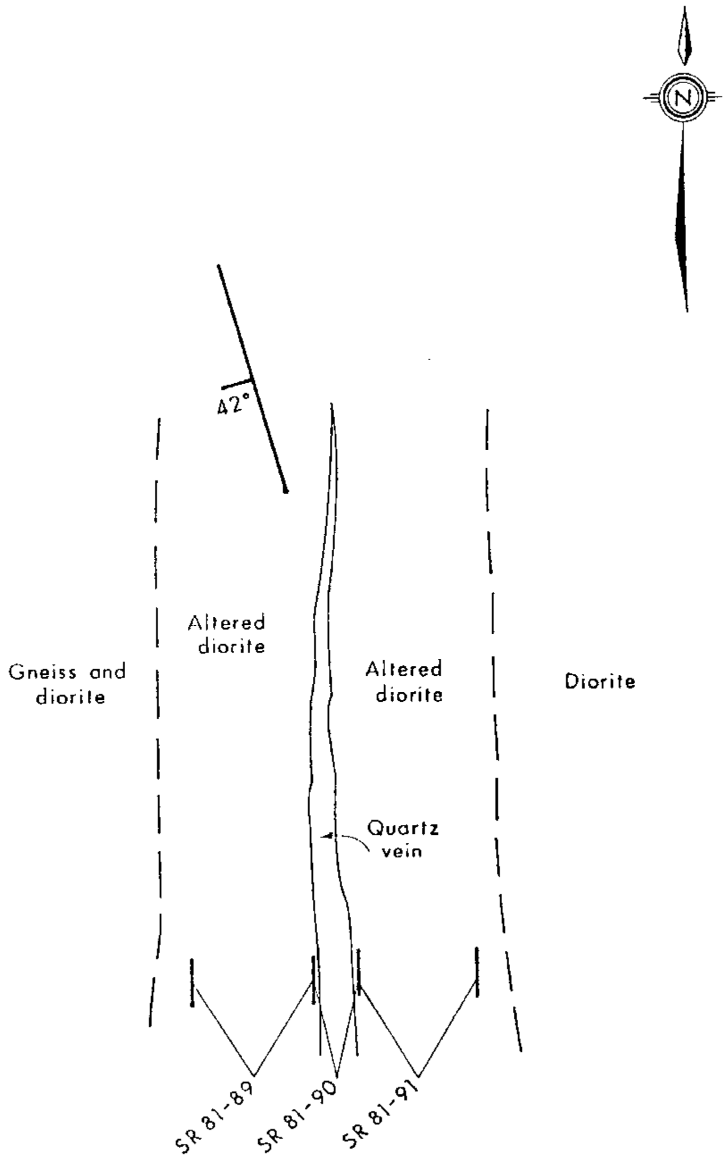
GEOLOGY and SAMPLE LOCATION

SADIE'S CREEK SHOWINGS – 145m el.

Scale: 0 0.5 1m | Date: SEPT. 1981 | Plate: 14

NCI 112A - CL

210-0610



SADIE'S CREEK
125 m ELEV.

		1981 ANALYSES			1986 ANALYSES			
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 89	9986	20	0.4	21	20	0.15	< 1	4
90	87	7,900	2.5	2,130	70	6.90	2	2
91	88	20	0.4	22	10	0.05	< 2	< 2

Drawn by: S. J. J. | Traced by: H. H.

Revised by | Date | Revised by | Date

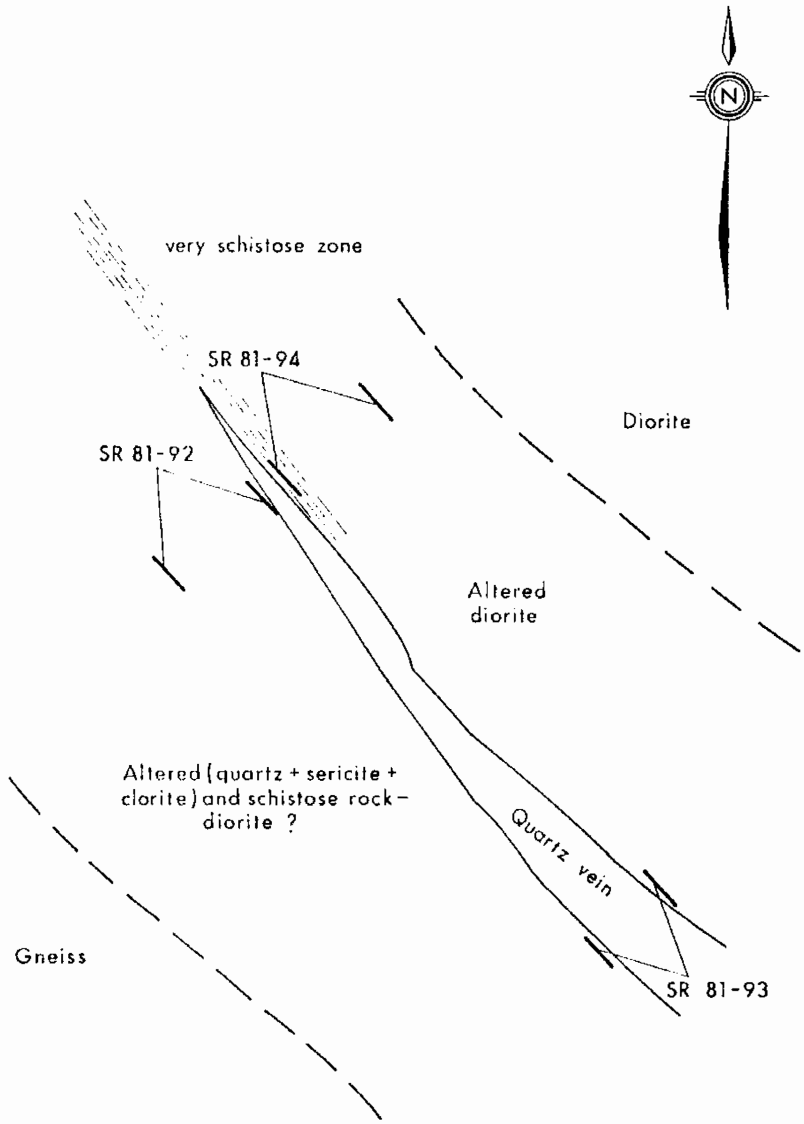
SURF INLET

GEOLOGY and SAMPLE LOCATION

SADIE'S CREEK SHOWINGS – 125 m el.

Scale: 0 0.5 1m | Date: SEPT. 1981 | Plate: 15

210-0610



SADIE'S CREEK
105 m ELEV.

FIELD NO.	LAB NO.	1981 ANALYSES Au (ppb)	Ag (ppm)	Cu (ppm)	1986 ANALYSES Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 92	9989	30	0.4	18	30	0.50	< 1	4
93	90	440	0.4	724	30	2.00	--	--
94	91	30	0.4	189	20	0.10	--	--
95	92	1,600	0.4	1,380	30	2.10	< 1	2

* a 1 m long chip sample encompassing 2, 2-5 cm wide quartz veins located 5 m north of above showing.

Drawn by: S. J. J.		Traced by: H. H.	
Revised by	Date	Revised by	Date

SURF INLET

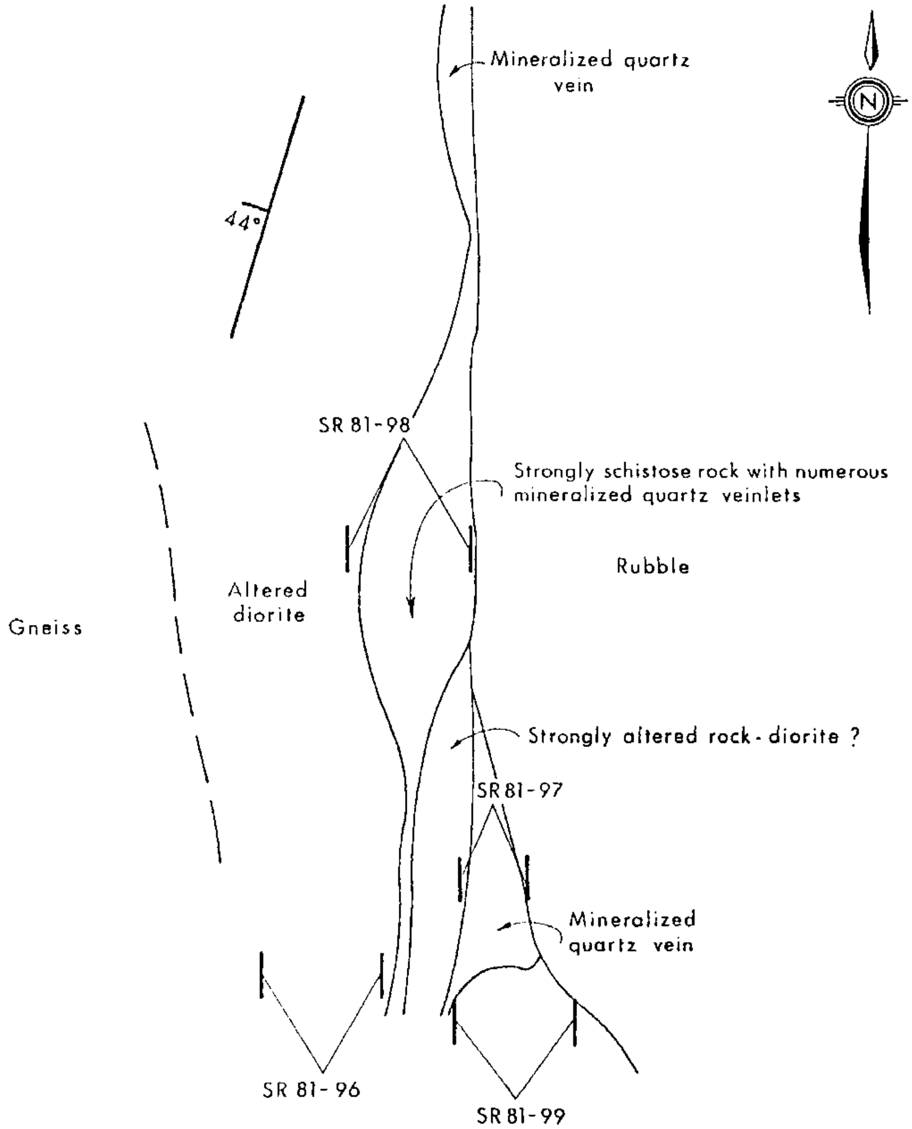
GEOLOGY and SAMPLE LOCATION

SADIE'S CREEK SHOWINGS – 105 m el.

Scale: 0 0.5 1m	Date: SEPT. 1981	Plate: 16

NCL 112A - CL

210-0610



SADIE'S CREEK
95 m ELEV.

		1981 ANALYSES			1986 ANALYSES			
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 96	9993	10	0.4	112	10	0.20	--	--
97	94	1,760	3.5	1,718	40	1.75	2	< 2
98	95	960	1.3	1,590	70	1.80	--	--
99	96	100	0.4	740	50	0.30	< 1	2

Drawn by: S.J.J.	Traced by: H. H.
Revised by / Date	Revised by / Date

SURF INLET

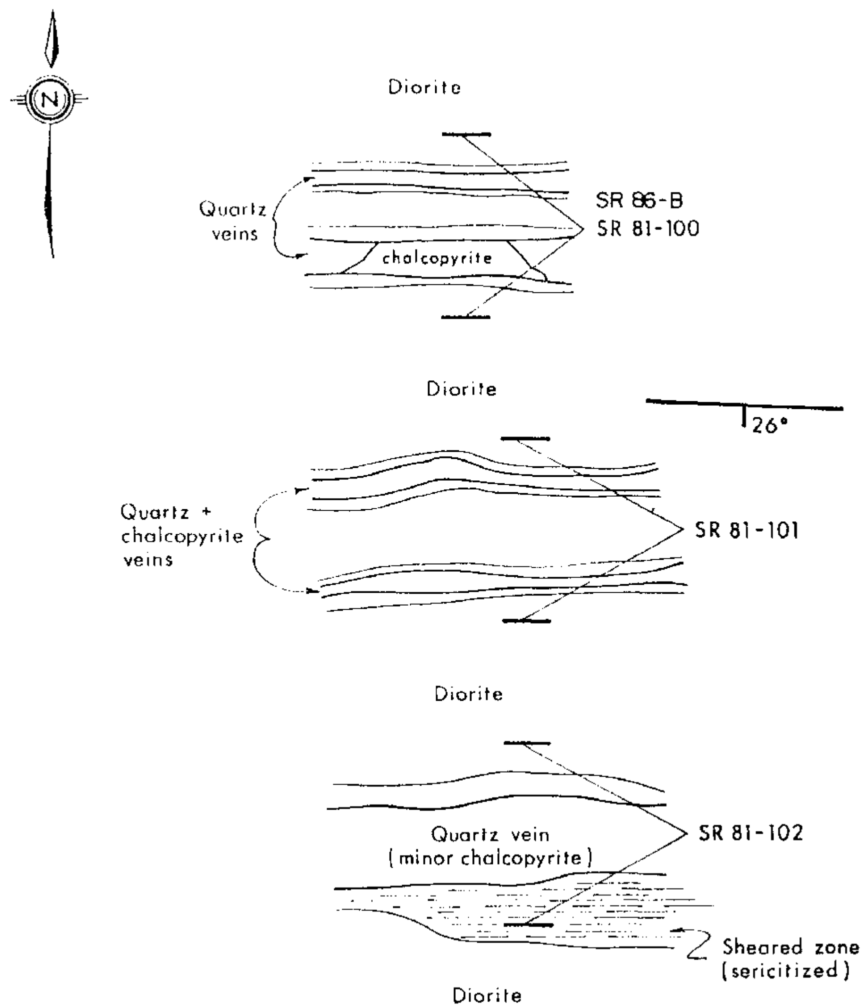
GEOLOGY and SAMPLE LOCATION

SADIE'S CREEK SHOWINGS - 95 m el.

Scale: 0 0.5 1m	Date: SEPT. 1981	Plate: 17

NCI - 112A - CL

210-0610



E-W VEIN AT MOUTH OF SADIE'S CREEK

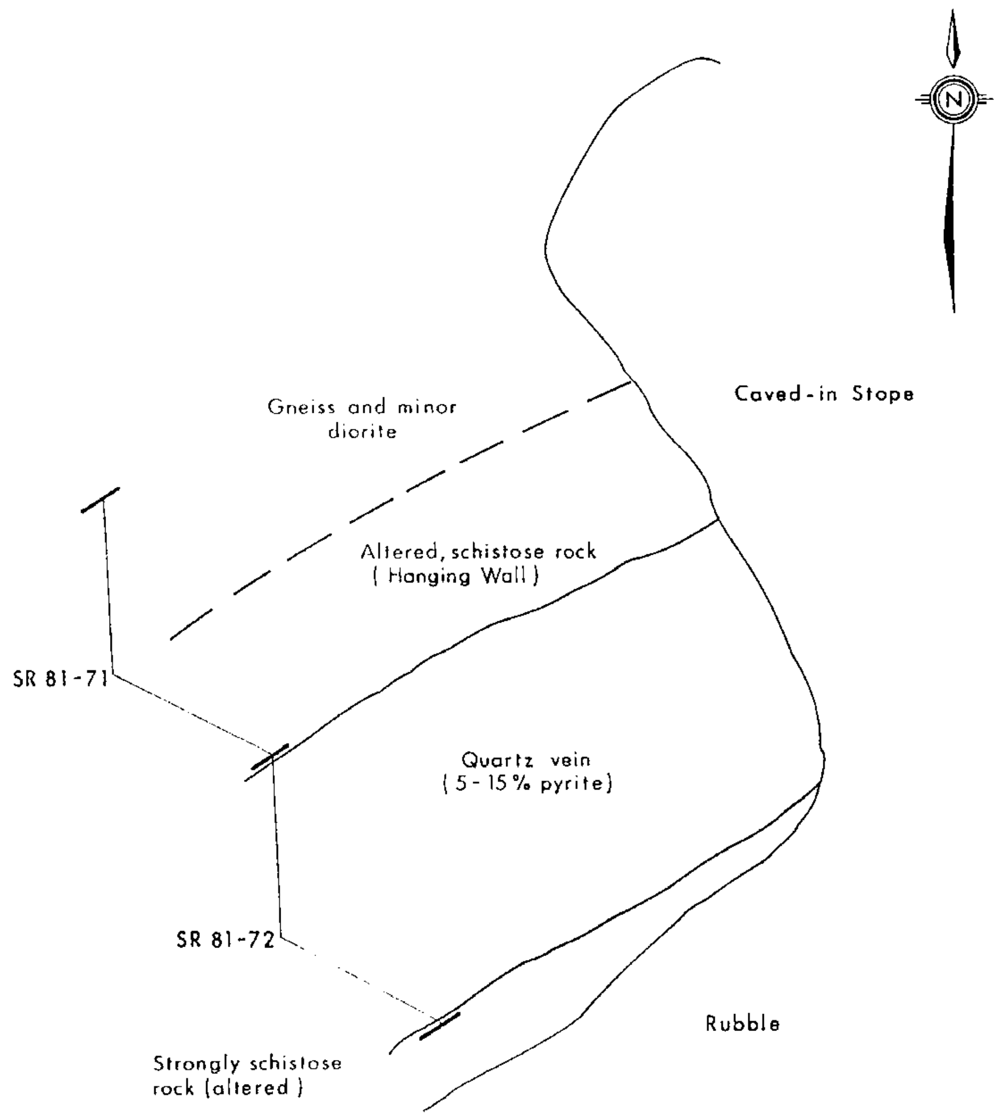
1981 ANALYSES

FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81-100		10	11.0	54,100	--	--	--	--
101		20	1.7	3,630	--	--	--	--
102		110	1.1	6,010	--	--	--	--
					--	--	--	--
1986 ANALYSES								
86-B	8	450	13	> 1%	250	1.0	5	6

Drawn by: S.J.J.	Traced by: H.H.	SURF INLET GEOLOGY and SAMPLE LOCATION E - W VEINS - MOUTH OF SADIE'S CREEK
Revised by / Date	Revised by / Date	Scale: 0 0.5 1m / Date: SEPT. 1981 / Plate: 18

NCI 112A CL

210-0610



BLUFF
200L ADIT - A

		1981 ANALYSES			1986 ANALYSES			
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 71	9882	140	0.4	45	40	0.95	--	--
72	9883	30,000	97.7	224	660	29.00	--	--

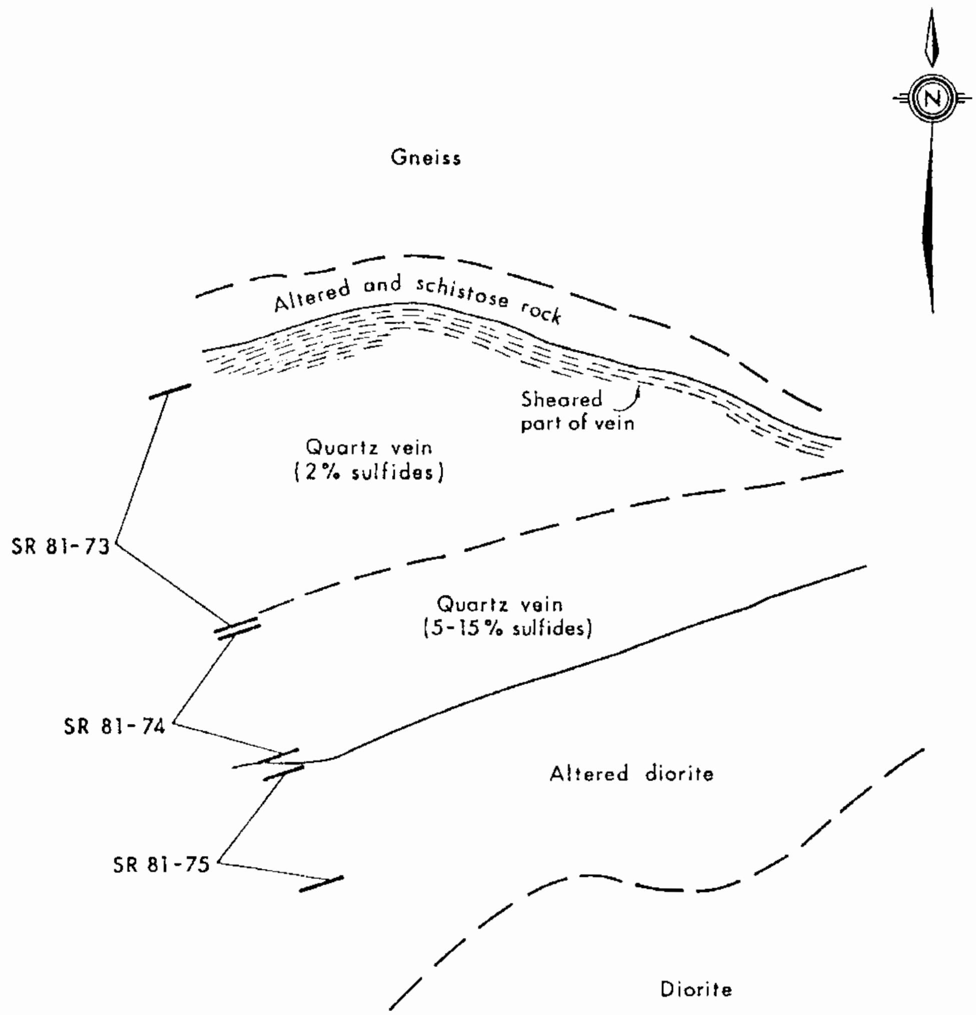
Drawn by: S.J.J.		Traced by: H.H.	
Revised by	Date	Revised by	Date

SURF INLET
GEOLOGY and SAMPLE LOCATION
BLUFF SHOWING - 200 L. ADIT AREA

Scale: 0 0.5 m | Date: SEPT. 1981 | Plate: 19 A

NCI - 112A - CL

210-0610



BLUFF
200L ADIT - B

		1981 ANALYSES			1986 ANALYSES			
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 73	9884	6,230	9.8	67	110	9.20	--	--
74	85	1,520	3.2	43	130	3.20	--	--
75	86	30	< 0.4	442	40	0.10	--	--

Drawn by: S.J.J.		Traced by: H.H.	
Revised by	Date	Revised by	Date

SURF INLET

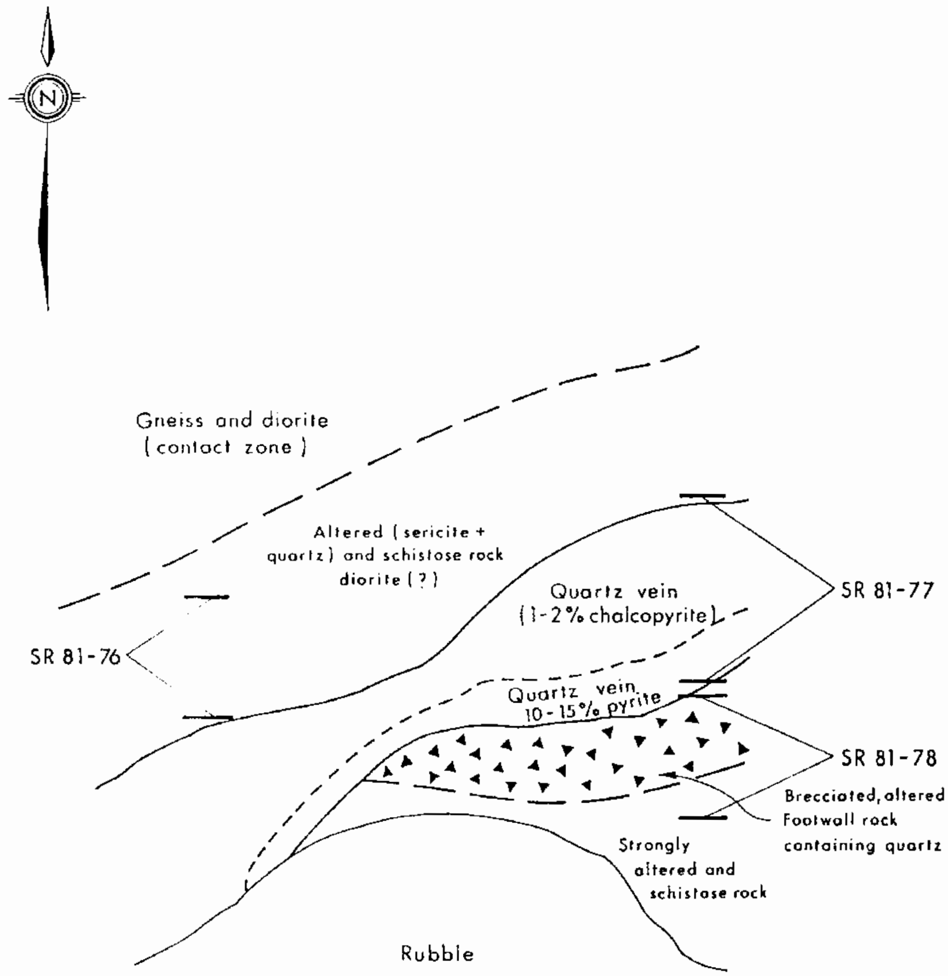
GEOLOGY and SAMPLE LOCATION

BLUFF SHOWING – 200 L. ADIT AREA

Scale: 0 0.5 1m | Date: SEPT. 1981 | Plate: 19 B

NCI - 112A - CL

210-0610



BLUFF
348m ELEV

		1981 ANALYSES			1986 ANALYSES			
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 76	9887	100	0.4	241	30	0.25	--	--
77	88	1,400	7.5	9,670	90	1.80	7	28
78	89	160	< 0.4	619	20	0.25	< 1	28

Drawn by: S.J.J.	Traced by: H.H.
Revised by / Date	Revised by / Date

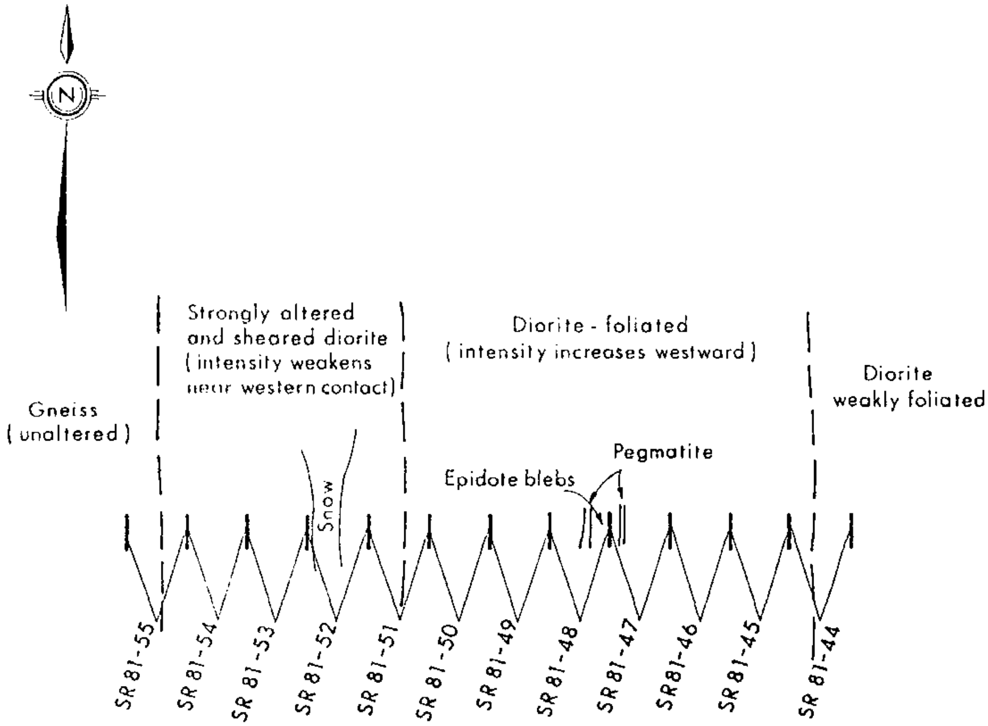
SURF INLET

GEOLOGY and SAMPLE LOCATION
BLUFF SHOWING – 348 m ELEVATION

Scale: 0 0.5 1m | Date: SEPT. 1981 | Plate: 20

NCI - 112A - CL

210-0610



RIDGE SHEAR ZONE A

		1981 ANALYSES			1986 ANALYSES			
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 44		< 10	< 0.4	38	--	--	--	--
45		< 10	< 0.4	24	--	--	--	--
46		10	< 0.4	36	--	--	--	--
47		< 10	< 0.4	19	--	--	--	--
48		< 10	< 0.4	15	--	--	--	--
49		< 10	< 0.4	19	--	--	--	--
50		10	< 0.4	19	--	--	--	--
51		< 10	< 0.4	29	--	--	--	--
52	9810	< 10	< 0.4	23	30	< 0.05	--	--
53		< 10	< 0.4	16	--	--	--	--
54		< 10	< 0.4	59	--	--	--	--
55		< 10	< 0.4	15	--	--	--	--

Drawn by: S.J.J. | Traced by: H.H.

Revised by | Date | Revised by | Date

SURF INLET

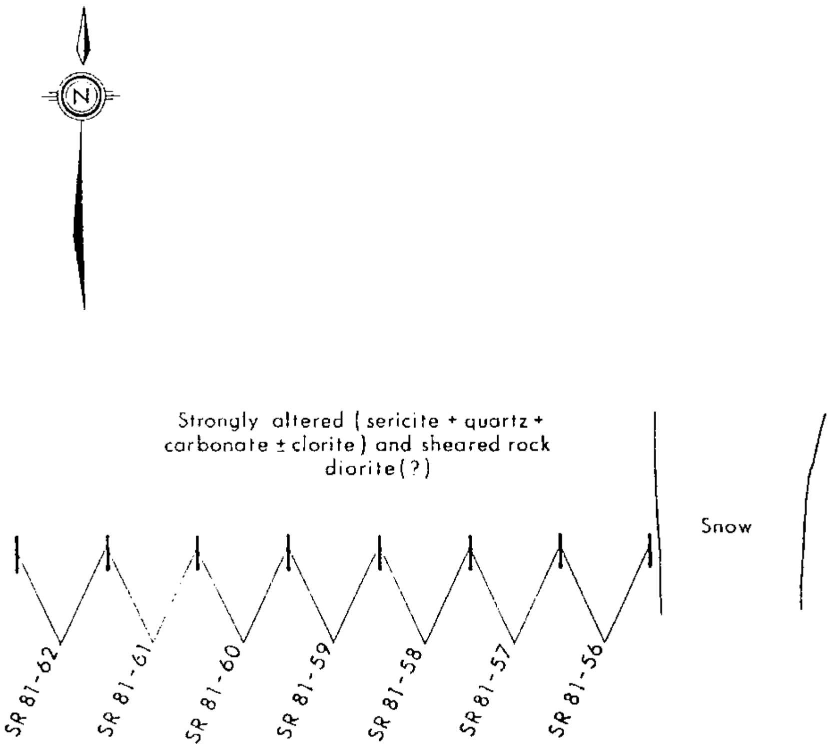
GEOLOGY and SAMPLE LOCATION

RIDGE SHEAR ZONE – A

Scale: 0 10 20 30m | Date: SEPT. 1981 | Plate: 21 A

NCI - 112A - CL

210-0610



RIDGE SHEAR ZONE B

1981 ANALYSES

FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81- 56	9814	< 10	< 0.4	14	20	< 0.05	--	--
57		< 10	< 0.4	12	--	--	--	--
58		< 10	< 0.4	21	--	--	--	--
59	9817	< 10	< 0.4	39	20	< 0.05	--	--
60		< 10	< 0.4	14	--	--	--	--
61	9819	640	7.3	64	80	5.50	< 1	4
62	20	< 10	< 0.4	56	20	0.05	< 1	4

Drawn by: S.J.J. | Traced by: H.H.

Revised by | Date | Revised by | Date

SURF INLET

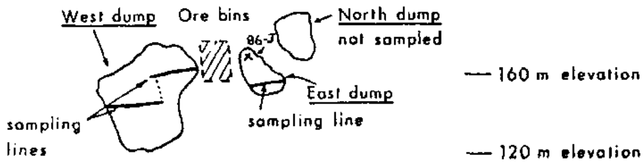
GEOLOGY and SAMPLE LOCATION

RIDGE SHEAR ZONE – B

Scale: 0 1 2 3 4 5m | Date: SEPT. 1981 | Plate: 21 B

NCI - 112A - CL

210-0610



Note: Samples were taken at 6 m intervals along the sampling lines.
1. West dump samples: SR 81-125 (western flank) to SR 81-143 (eastern flank).
2. East dump samples: SR 81-144 (western flank) to SR 81-151 (eastern flank).

SURF 550 DUMPS - WEST

		1981 ANALYSES			1986 ANALYSES			
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81-125	10605	7,170	0.8	117	20	8.00	--	--
126	10606	130	0.6	577	60	0.30	3	300
127		690	0.7	290	--	--	--	--
128		4,280	9.3	1,646	--	--	--	--
129	10609	1,820	2.2	2,510	20	2.25	--	--
130	10610	14,800	5.3	1,626	40	10.00	1	26
131		560	0.7	272	--	--	--	--
132		1,240	1.0	259	--	--	--	--
133	10633	470	0.8	405	40	0.60	--	--
134		480	0.5	558	--	--	--	--
135		10,200	4.8	1,094	--	--	--	--
136		3,600	2.7	240	--	--	--	--
137		860	0.9	160	--	--	--	--
138		4,900	9.6	1,768	--	--	--	--
139		2,150	1.0	394	--	--	--	--
140	10620	10,200	5.9	3,490	100	12.50	--	--

SURF 550 DUMPS - EAST

		1981 ANALYSES			1986 ANALYSES			
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81-141		1,140	1.9	523	--	--	--	--
142	10622	144	2.1	444	50	2.05	--	--
143		1,080	1.7	3,460	--	--	--	--
144	10624	980	0.4	202	40	1.55	--	--
145	10625	230	< 0.4	60	60	2.50	3	25
146	10626	5,210	4.6	1,459	150	5.70	93	18
147		1,680	1.4	752	--	--	--	--
148	10628	272	< 0.4	13	60	0.40	--	--
149	10629	4,770	1.2	270	40	4.70	--	--
150	10630	144	2.1	444	50	2.05	--	--
151		124	< 0.4	874	--	--	--	--
		1986 ANALYSES						
86-J	J	45,571	52	5,838	470	58.3	117	3

103 H/2W

SURF INLET

Drawn by: SJJ | Traced by: FJF

Revised by	Date	Revised by	Date

GEOLOGY AND SAMPLE LOCATIONS
DUMP SAMPLES – SURF WASTE DUMPS

Scale: 0 50 100m | Date: Sept. 1, 1981 | Plate: 22

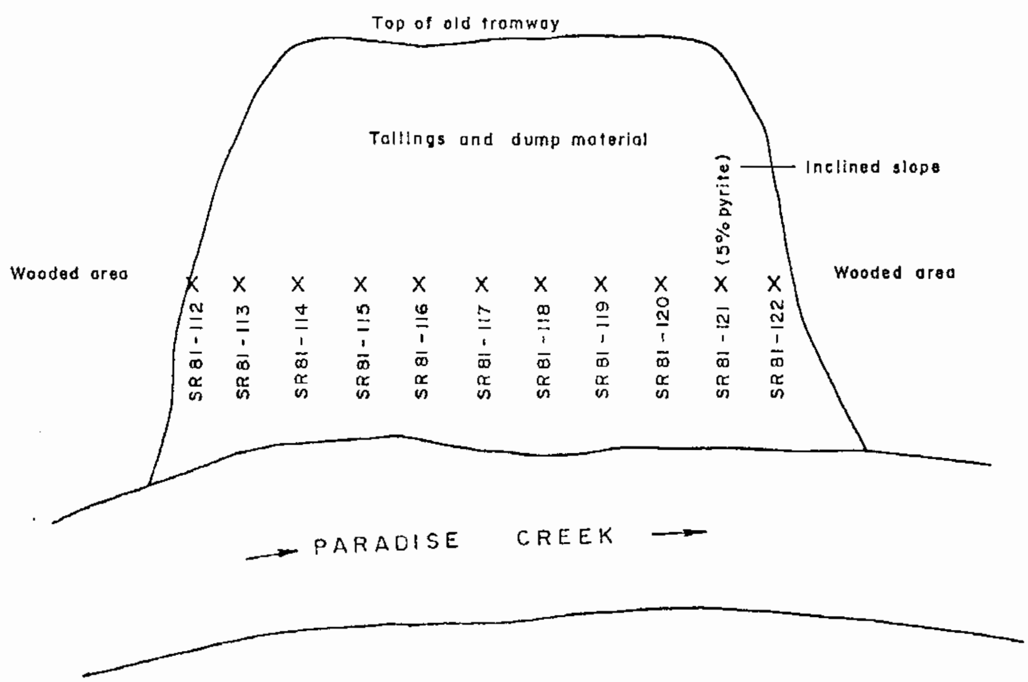
NCL-112A-CL

210-0610

PARADISE CREEK DUMP

		1981 ANALYSES			1986 ANALYSES			
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81-112	10212	2,540	0.8	397	110	7.70	--	--
113		1,600	1.2	1,244	--	--	--	--
114	10214	580	0.9	689	70	2.05	--	--
115		1,620	0.9	616	--	--	--	--
116	10216	190	0.7	426	40	0.45	--	--
117		230	0.4	98	--	--	--	--
118	10218	690	1.2	200	100	1.20	13	2
119	10219	3,250	1.0	750	60	13.50	13	4
120		1,500	1.8	2,500	--	--	--	--
121	10221	18,000	8.0	8,330	120	11.50	--	--
122		3,690	2.4	8,660	--	--	--	--

FACING SOUTH



SURF INLET

103 H/2W

Drawn by: SJJ		Traced by: FJF		GEOLOGY AND SAMPLE LOCATIONS DUMP SAMPLES FROM CREEK CUT PARADISE CREEK
Revised by	Date	Revised by	Date	

Scale: 0 5 10m | Date: Sept. 1, 1981 | Plate: 23

NCI - 112A - CL

210-0610

SURF 200L ADIT DUMPS

1986 ANALYSES

FIELD No.	LAB No.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SW 86- C	C	2,300	2	692	110	10.0	118	4
D	D	125,000	118	571	1,100	135.0	356	< 2
E	E	3,450	2	< 18	50	2.4	9	4
F	F	49,000	40	2,459	410	43.0	117	< 2
G	G	2,700	15	< 18	200	4.0	10	< 2
H	H	116,500	172	< 18	1,300	218.0	208	< 2

PUGSLEY U/G

FIELD NO.	LAB NO.	SAMPLE WIDTH (m)	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
		1981 ANALYSES				1986 ANALYSES			
SR 81-152	12486	2.5	14,000	29.9	2,340	3,400	18.00	39	2
153	12487	2.0	124	0.4	168	4,000	0.75	52	< 2
154	12488	3.0	48	0.4	168	850	0.15	--	--
155		3.0	136	0.4	295	--	--	--	--
156		3.0	22	0.4	102	--	--	--	--
157		3.0	102	0.4	300	--	--	--	--
158	12492	3.0	124	1.8	6,100	1,420	0.55	19	< 2
159		3.0	182	4.2	6,750	--	--	--	--
160	12494	2.0	10	0.4	34	1,600	0.10	--	--
161		3.0	656	3.7	5,470	--	--	--	--
162		3.0	242	0.4	1,465	--	--	--	--
163	12497	3.0	456	0.4	65	2,400	0.85	2	< 2
164		2.0	820	0.9	1,664	--	--	--	--
165	12499	2.0	2,030	1.3	1,586	5,600	3.80	3	2
166	12500	2.0	1,484	1.2	2,740	1,700	2.25	73	2
167		2.0	420	0.5	790	--	--	--	--
168	12502	3.0	1,140	14.0	31,300	320	1.55	--	--
169	12503	3.0	64	0.4	147	130	0.40	--	--
170		3.0	10	0.4	46	--	--	--	--
			1986 ANALYSES						
86-A	A	GR	1,900	39	> 1%	510	10.5	1	6

LEGEND

5 QUARTZ VEINS — quartz ± ankerite ± sulfide veins
- 5a quartz + pyrite ± chalcopyrite veins
- 5b quartz + chalcopyrite ± pyrite veins
- 5c unmineralized quartz veins

4 ALTERED HOST ROCK — a sericite + chlorite + carbonate + quartz rock

3 DIORITE — medium to coarse-grained, variably foliated, plagioclase + hornblende + biotite intrusive rock — Minor quartz and magnetite are also present
- 3g Gneissic diorite characterized by a strong alignment of mafic minerals

2 DIORITE — GNEISS CONTACT ZONE — Assimilation zone containing variably oriented gneiss fragments in diorite and/or numerous diorite dikes in the gneisses

1 GNEISS — quartz + biotite + feldspar + hornblende gneiss

SYMBOLS

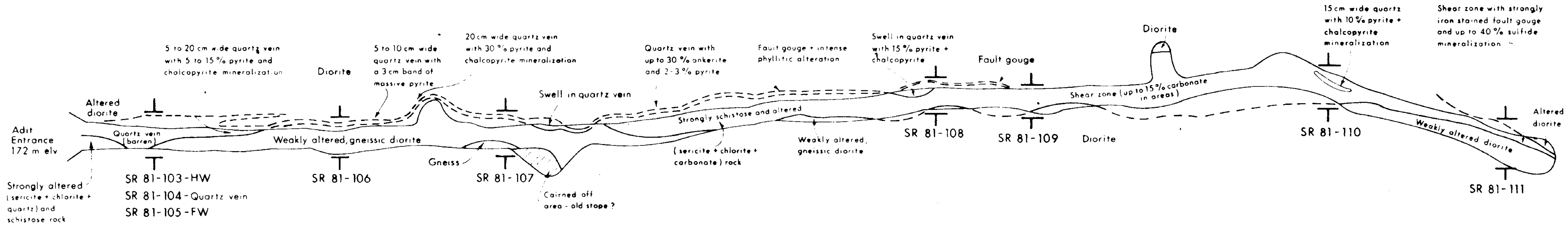
/ /	Geological boundary — definite, inferred
~~	Fault
	Shear zone
⊣ ⊢	Sampling width
Dr.	Drift
x-cut	Crosscut

GEOLOGICAL BRANCH
ASSESSMENT REPORT

15,377

SURF INLET	N.T.S 103 H/2 W
Drawn by: S.J.J.	Traced by: H.H.
Revised by: SG — Date: Sept 86	Revised by: — Date:
GEOLOGY and SAMPLE LOCATION PUGSLEY MINE - 900 LEVEL	
Scale: 0 5 10m	Date: NOV. 1981 — Plate: 24

MCI - 120 - C.L.



HOMESTAKE U/G

		1981 ANALYSES			1986 ANALYSES			
FIELD NO.	LAB NO.	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
SR 81-103		160	< 0.4	81	--	--	--	--
104	10204	240	0.4	24	280	0.6	1	4
105		140	< 0.4	38	--	--	--	--
106	10206	2,900	5.3	4,080	290	29.00	< 1	< 2
107	10207	7,500	1.0	235	120	7.40	--	--
108	10208	10,500	3.6	1,890	3,000	30.00	--	--
109		90	< 0.4	56	--	--	--	--
110	10210	4,630	5.8	5,150	1,640	13.00	11	2
111	10211	3,860	2.3	763	820	9.50	--	--

All samples taken over 1 m widths.

SYMBOLS

Geological contact - defined, inferred

Sampling width

GEOLOGICAL BRANCH
ASSESSMENT REPORT

15,377

SURF INLET N.T.S. 103 H/2 W

Drawn by: S.J.J. Traced by: H.H.
Revised by SG Date Sept 86

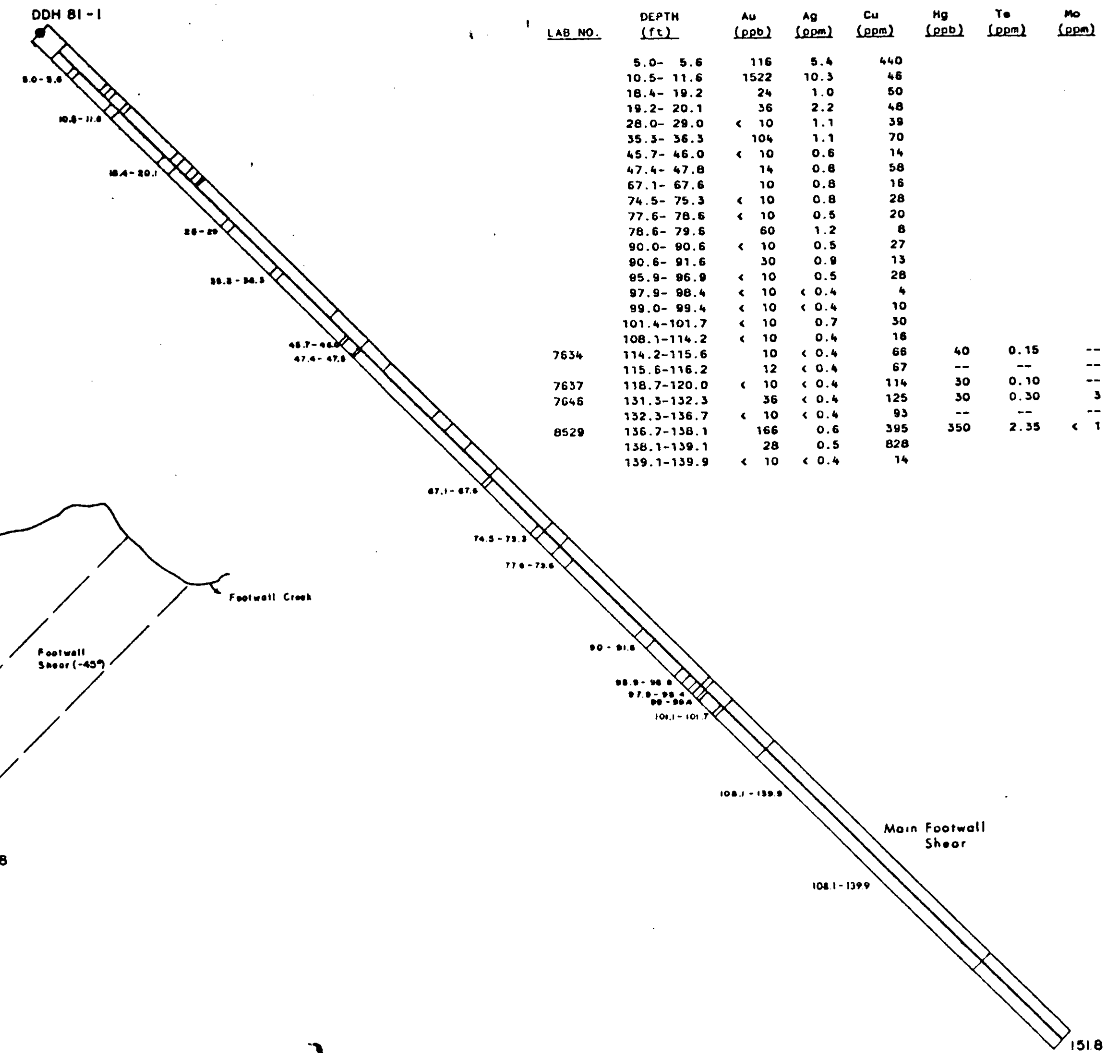
GEOLOGY and SAMPLE LOCATION
HOMESTAKE ADIT

Scale: 0 2 4 m Date: NOV. 1981 Plate: 25

NCI 114 CL #210-0640

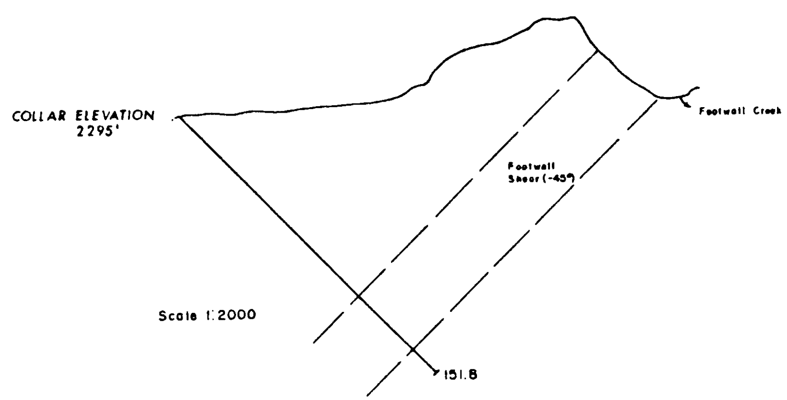
W

E



DDH81-1

LAB NO.	DEPTH (ft)	1981 ANALYSES Au (ppb)	Ag (ppm)	Cu (ppm)	1986 ANALYSES Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
	5.0- 5.6	116	5.4	440				
	10.5- 11.6	1522	10.3	46				
	18.4- 19.2	24	1.0	50				
	19.2- 20.1	36	2.2	48				
	28.0- 29.0	< 10	1.1	39				
	35.3- 36.3	104	1.1	70				
	45.7- 46.0	< 10	0.6	14				
	47.4- 47.8	14	0.8	58				
	67.1- 67.6	10	0.8	16				
	74.5- 75.3	< 10	0.8	28				
	77.6- 78.6	< 10	0.5	20				
	78.6- 79.6	60	1.2	8				
	90.0- 90.6	< 10	0.5	27				
	90.6- 91.6	30	0.9	13				
	95.9- 96.9	< 10	0.5	28				
	97.9- 98.4	< 10	< 0.4	4				
	99.0- 99.4	< 10	< 0.4	10				
	101.4-101.7	< 10	0.7	30				
	108.1-114.2	< 10	0.4	16				
7634	114.2-115.6	10	< 0.4	66	40	0.15	--	--
	115.6-116.2	12	< 0.4	67	--	--	--	--
7637	118.7-120.0	< 10	< 0.4	114	30	0.10	--	--
7646	131.3-132.3	36	< 0.4	125	30	0.30	3	8
	132.3-136.7	< 10	< 0.4	93	--	--	--	--
8529	136.7-138.1	166	0.6	395	350	2.35	< 1	2
	138.1-139.1	28	0.5	828				
	139.1-139.9	< 10	< 0.4	14				

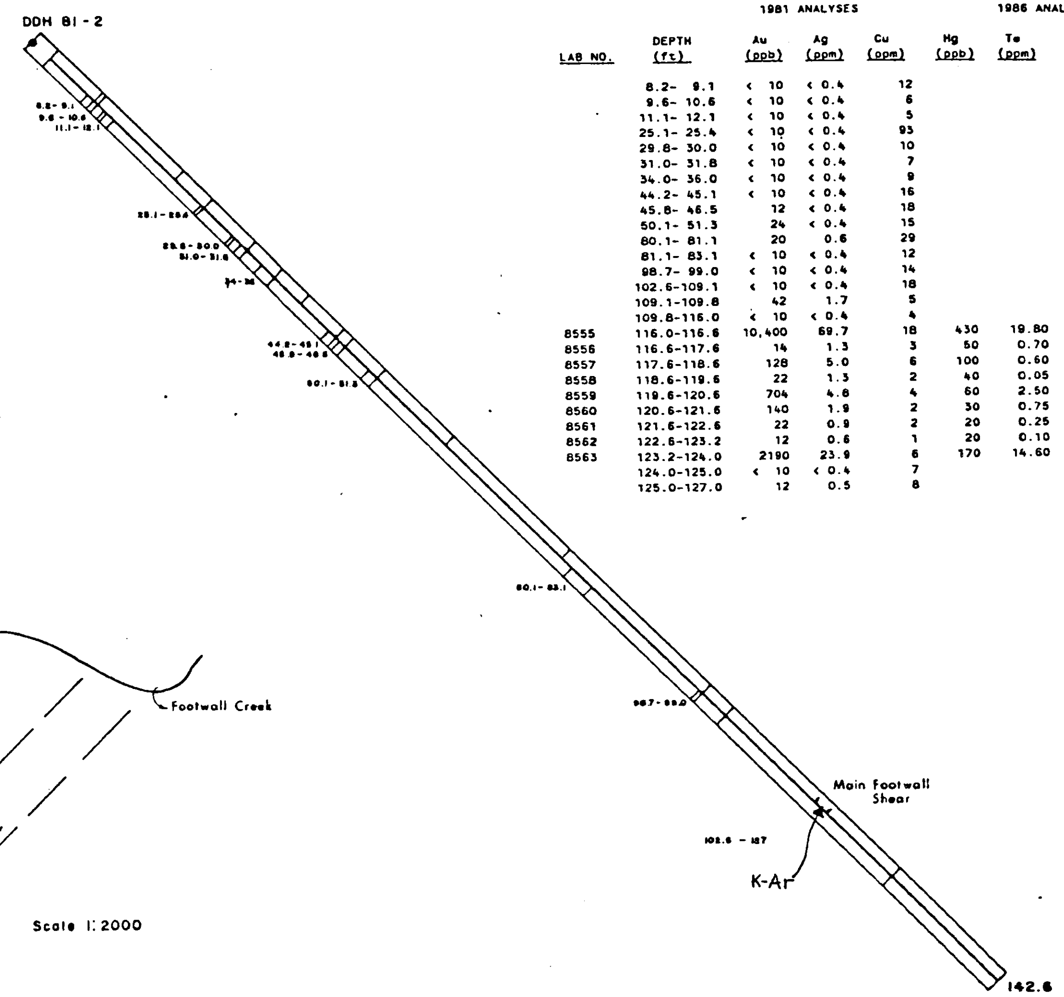


Scale 1:2000

103 H / 2 W	SURF INLET		
Drawn by: ACF	Traced by: FJF	DDH 81 - I	
Revised by: SG, Date: Sept 86	Revised by / Date		
Scale: 0 5 10 m	Date: October, 1981	Plate: 26	

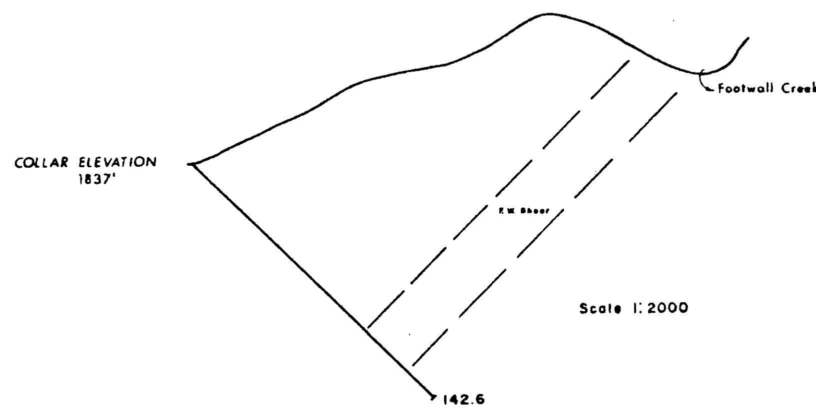
W

E



DDH81-2

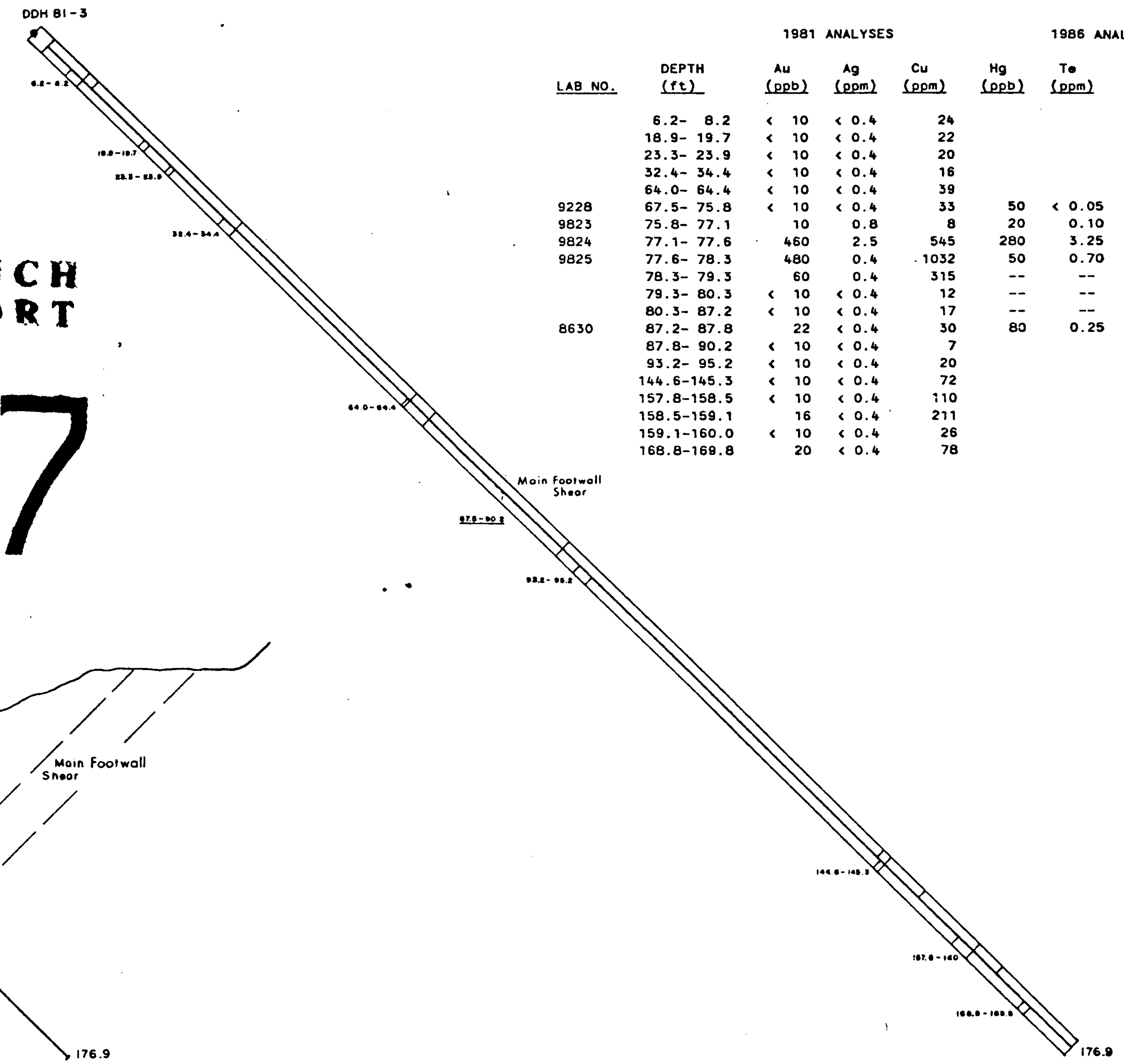
LAB NO.	DEPTH (ft)	1981 ANALYSES Au (ppb)	Ag (ppm)	Cu (ppm)	1986 ANALYSES Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
	8.2- 9.1	< 10	< 0.4	12				
	9.6- 10.6	< 10	< 0.4	6				
	11.1- 12.1	< 10	< 0.4	5				
	25.1- 25.4	< 10	< 0.4	93				
	29.8- 30.0	< 10	< 0.4	10				
	31.0- 31.8	< 10	< 0.4	7				
	34.0- 36.0	< 10	< 0.4	9				
	44.2- 45.1	< 10	< 0.4	16				
	45.8- 46.5	12	< 0.4	18				
	50.1- 51.3	24	< 0.4	15				
	80.1- 81.1	20	0.6	29				
	81.1- 83.1	< 10	< 0.4	12				
	98.7- 99.0	< 10	< 0.4	14				
	102.6-109.1	< 10	< 0.4	18				
	109.1-109.8	42	1.7	5				
	109.8-116.0	< 10	< 0.4	4				
8555	116.0-116.6	10,400	69.7	18	430	19.80	1	< 2
8556	116.6-117.6	14	1.3	3	50	0.70	< 1	2
8557	117.6-118.6	128	5.0	6	100	0.60	< 1	< 2
8558	118.6-119.6	22	1.3	2	40	0.05	< 1	< 2
8559	119.6-120.6	704	4.8	4	60	2.50	< 1	< 2
8560	120.6-121.6	140	1.9	2	30	0.75	< 1	4
8561	121.6-122.6	22	0.9	2	20	0.25	2	< 2
8562	122.6-123.2	12	0.6	1	20	0.10	< 1	< 2
8563	123.2-124.0	2190	23.9	6	170	14.60	4	< 2
	124.0-125.0	< 10	< 0.4	7				
	125.0-127.0	12	0.5	8				



Scale 1:2000

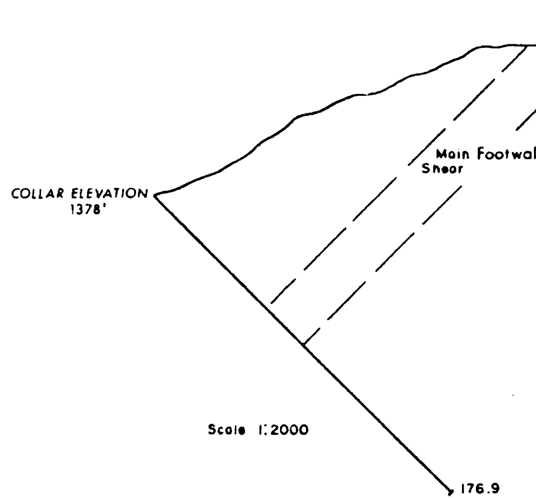
103 H/2W	SURF INLET		
Drawn by: ACF	Traced by: FJF	DDH 81-2	
Revised by: SG, Date: Sept 86	Revised by / Date		
Scale: 0 5 10 m	Date: October, 1981	Plate: 27	

210 0620



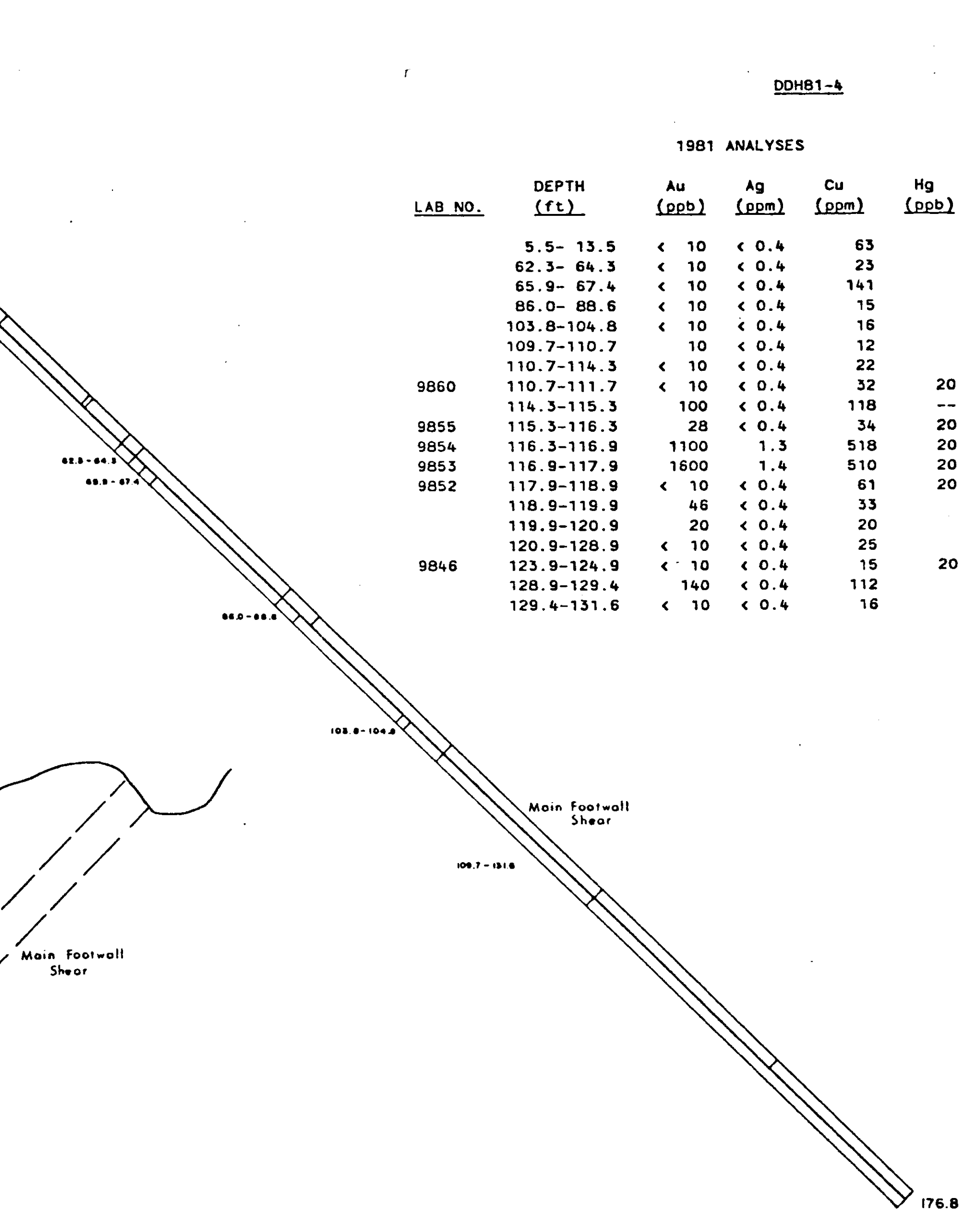
DDH81-3

LAB NO.	DEPTH (ft)	1981 ANALYSES Au (ppb)	Ag (ppm)	Cu (ppm)	1986 ANALYSES Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
	6.2- 8.2	< 10	< 0.4	24				
	18.9- 19.7	< 10	< 0.4	22				
	23.3- 23.9	< 10	< 0.4	20				
	32.4- 34.4	< 10	< 0.4	16				
	64.0- 64.4	< 10	< 0.4	39				
9228	67.5- 75.8	< 10	< 0.4	33	50	< 0.05	--	--
9823	75.8- 77.1	10	0.8	8	20	0.10	--	--
9824	77.1- 77.6	460	2.5	545	280	3.25	1	10
9825	77.6- 78.3	480	0.4	1032	50	0.70	--	--
	78.3- 79.3	60	0.4	315	--	--	--	--
	79.3- 80.3	< 10	< 0.4	12	--	--	--	--
	80.3- 87.2	< 10	< 0.4	17	--	--	--	--
8630	87.2- 87.8	22	< 0.4	30	80	0.25	< 1	2
	87.8- 90.2	< 10	< 0.4	7				
	93.2- 95.2	< 10	< 0.4	20				
	144.6-145.3	< 10	< 0.4	72				
	157.8-158.5	< 10	< 0.4	110				
	158.5-159.1	16	< 0.4	211				
	159.1-160.0	< 10	< 0.4	26				
	168.8-169.8	20	< 0.4	78				



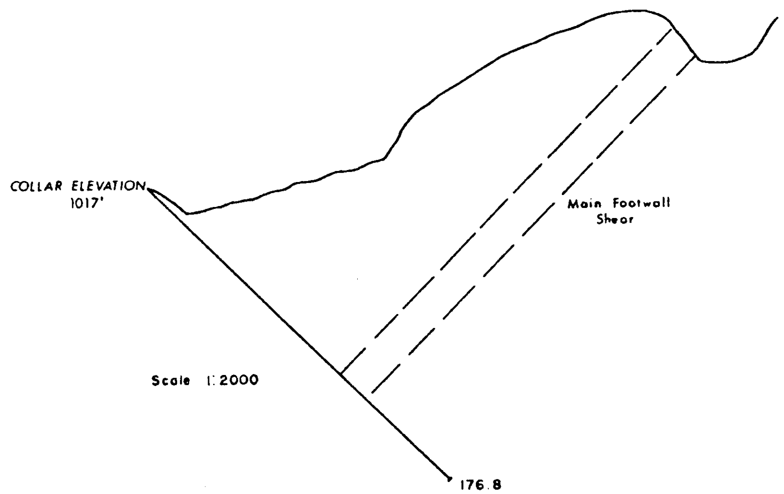
Scale 1:2000

103 H/2W	SURF INLET		
Drawn by: ACF	Traced by: FJF	DDH 81-3	
Revised by SG	Date Sept 86		
Scale: 0 5 10 m	Date: October, 1981	Plate: 28	



DDH81-4

LAB NO.	DEPTH (ft)	Au (ppb)	Ag (ppm)	Cu (ppm)	Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
		1981 ANALYSES			1986 ANALYSES			
	5.5- 13.5	< 10	< 0.4	63				
	62.3- 64.3	< 10	< 0.4	23				
	65.9- 67.4	< 10	< 0.4	141				
	86.0- 88.6	< 10	< 0.4	15				
	103.8-104.8	< 10	< 0.4	16				
	109.7-110.7	10	< 0.4	12				
	110.7-114.3	< 10	< 0.4	22				
9860	110.7-111.7	< 10	< 0.4	32	20	< 0.05	--	--
	114.3-115.3	100	< 0.4	118	--	--	--	--
9855	115.3-116.3	28	< 0.4	34	20	0.05	< 1	< 2
9854	116.3-116.9	1100	1.3	518	20	2.25	1	< 2
9853	116.9-117.9	1600	1.4	510	20	2.50	1	2
9852	117.9-118.9	< 10	< 0.4	61	20	0.10	--	--
	118.9-119.9	46	< 0.4	33				
	119.9-120.9	20	< 0.4	20				
	120.9-128.9	< 10	< 0.4	25				
9846	123.9-124.9	< 10	< 0.4	15	20	< 0.05	--	--
	128.9-129.4	140	< 0.4	112				
	129.4-131.6	< 10	< 0.4	16				



Scale 1:2000

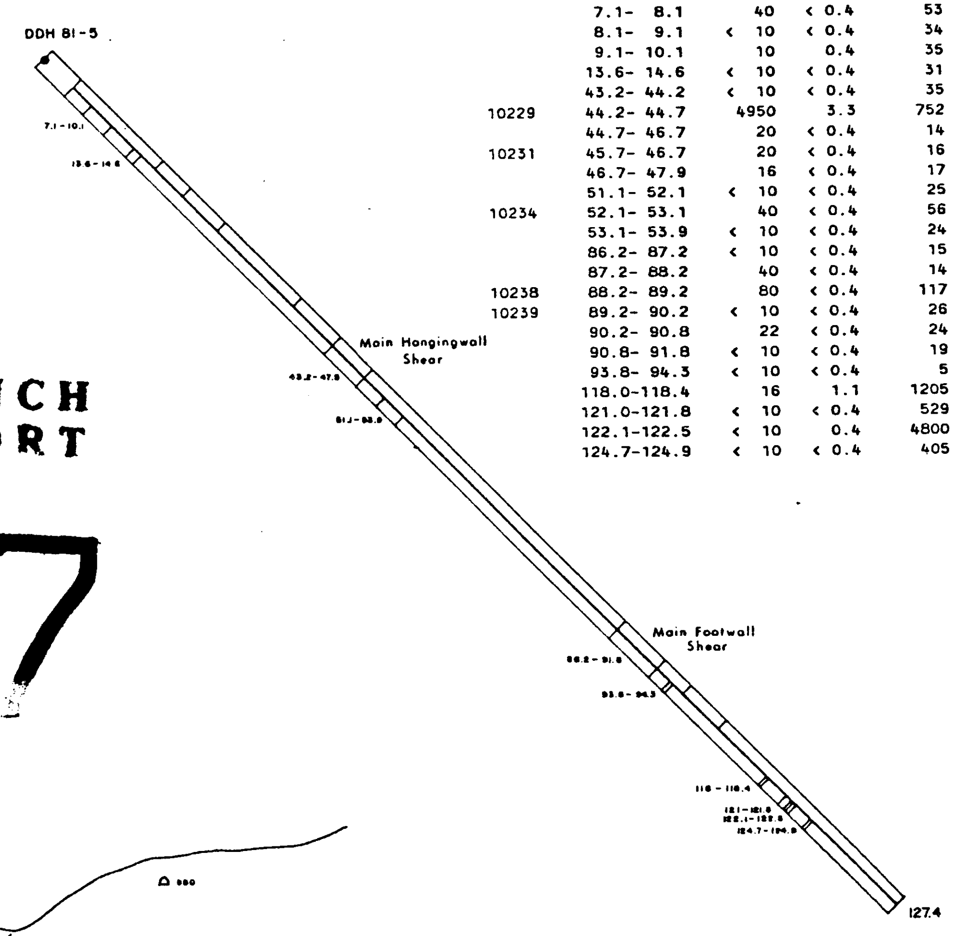
103 H/2W	SURF INLET
Drawn by: ACF / Traced by: FJF / Revised by: SG / Date: Sept 86	DDH 81 - 4
Scale: 0 5 10 m	Date: October, 1981 / Plate: 29

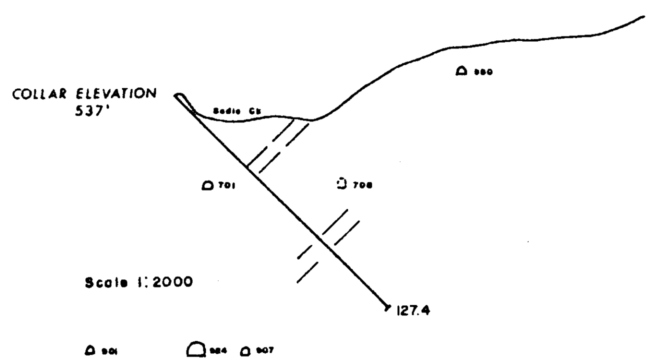
W

DDH81-5

LAB NO.	DEPTH (ft)	1981 ANALYSES Au (ppb)	Ag (ppm)	Cu (ppm)	1986 ANALYSES Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
	7.1- 8.1	40	< 0.4	53				
	8.1- 9.1	< 10	< 0.4	34				
	9.1- 10.1	10	0.4	35				
	13.6- 14.6	< 10	< 0.4	31				
	43.2- 44.2	< 10	< 0.4	35				
10229	44.2- 44.7	4950	3.3	752	80	7.00	1	2
	44.7- 46.7	20	< 0.4	14	--	--	--	--
10231	45.7- 46.7	20	< 0.4	16	20	0.10	--	--
	46.7- 47.9	16	< 0.4	17	--	--	--	--
	51.1- 52.1	< 10	< 0.4	25	--	--	--	--
10234	52.1- 53.1	40	< 0.4	56	20	0.05	< 1	< 2
	53.1- 53.9	< 10	< 0.4	24	--	--	--	--
	86.2- 87.2	< 10	< 0.4	15	--	--	--	--
	87.2- 88.2	40	< 0.4	14	--	--	--	--
10238	88.2- 89.2	80	< 0.4	117	20	0.25	< 1	4
10239	89.2- 90.2	< 10	< 0.4	26	20	0.05	--	--
	90.2- 90.8	22	< 0.4	24				
	90.8- 91.8	< 10	< 0.4	19				
	93.8- 94.3	< 10	< 0.4	5				
	118.0-118.4	16	1.1	1205				
	121.0-121.8	< 10	< 0.4	529				
	122.1-122.5	< 10	0.4	4800				
	124.7-124.9	< 10	< 0.4	405				

Elevation 163.7m
Bearing 090°
Angle -45°



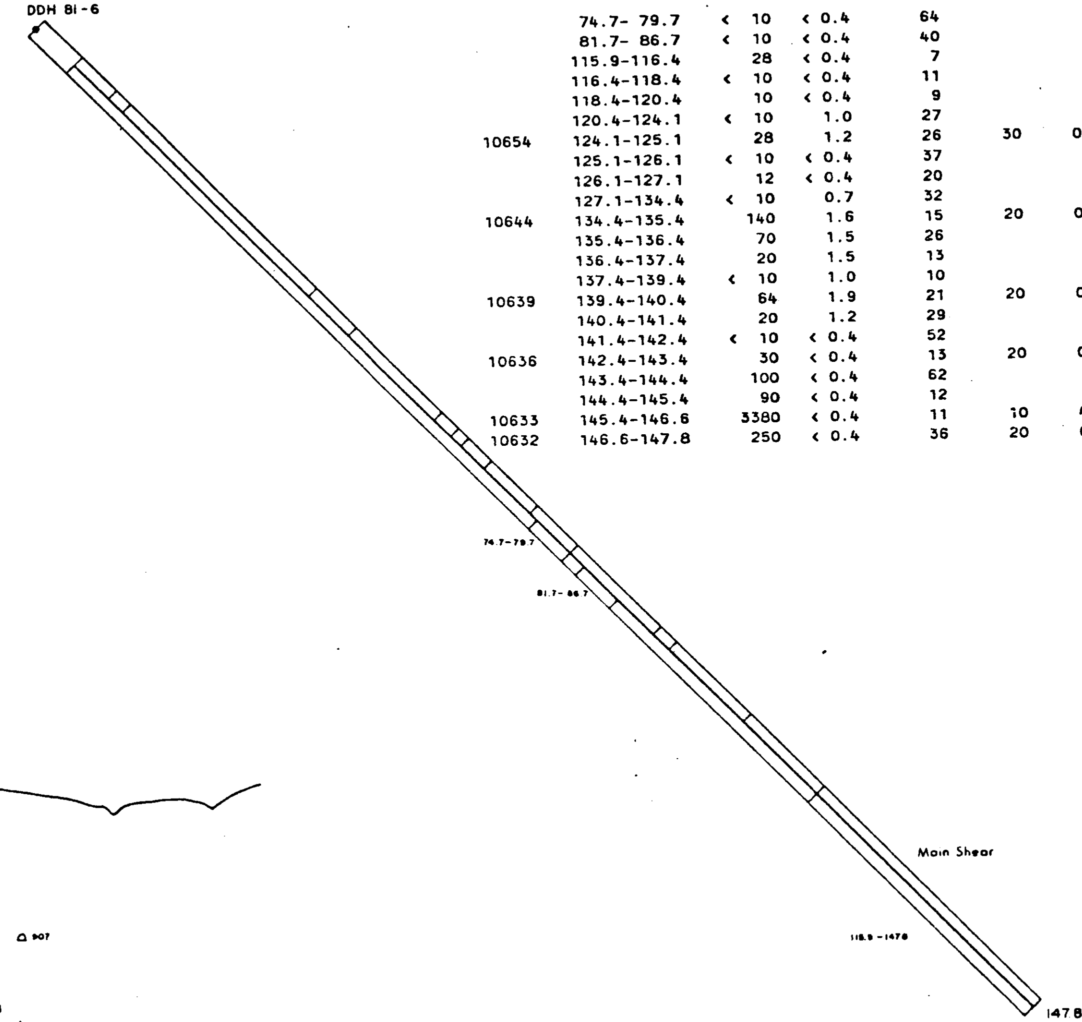


Scale 1:2000

103 H/2W	SURF INLET		
Drawn by: ACF	Traced by: FJF	DDH 81-5	
Revised by: SG, Date: Sept 86	Revised by / Date		
Scale: 0 5 10 m		Date: October, 1981	Plate: 30

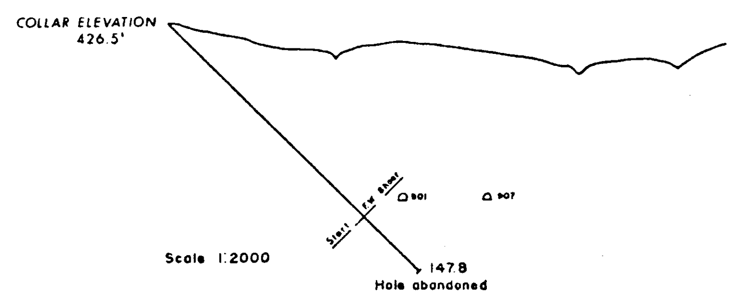
W

Elevation 130 m
Bearing 090°
Angle −45°



DDH81-6

LAB NO.	DEPTH (ft)	1981 ANALYSES Au (ppb)	Ag (ppm)	Cu (ppm)	1986 ANALYSES Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
	74.7- 79.7	< 10	< 0.4	64				
	81.7- 86.7	< 10	< 0.4	40				
	115.9-116.4	28	< 0.4	7				
	116.4-118.4	< 10	< 0.4	11				
	118.4-120.4	10	< 0.4	9				
	120.4-124.1	< 10	1.0	27				
10654	124.1-125.1	28	1.2	26	30	0.15	--	--
	125.1-126.1	< 10	< 0.4	37				
	126.1-127.1	12	< 0.4	20				
	127.1-134.4	< 10	0.7	32				
10644	134.4-135.4	140	1.6	15	20	0.35	< 1	4
	135.4-136.4	70	1.5	26				
	136.4-137.4	20	1.5	13				
	137.4-139.4	< 10	1.0	10				
10639	139.4-140.4	64	1.9	21	20	0.15	--	--
	140.4-141.4	20	1.2	29				
	141.4-142.4	< 10	< 0.4	52				
10636	142.4-143.4	30	< 0.4	13	20	0.05	--	--
	143.4-144.4	100	< 0.4	62				
	144.4-145.4	90	< 0.4	12				
10633	145.4-146.6	3380	< 0.4	11	10	4.00	4	6
10632	146.6-147.8	250	< 0.4	36	20	0.50	--	--

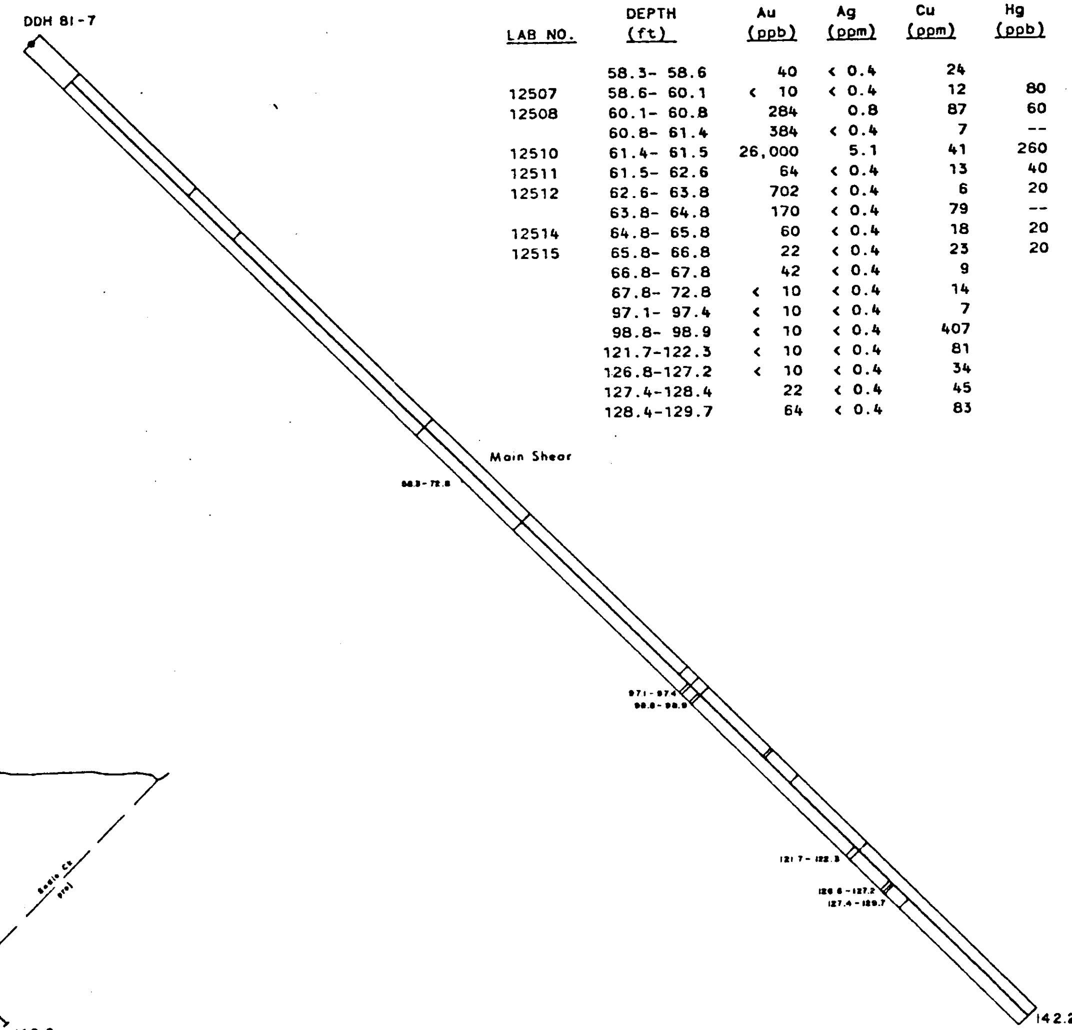


Scale 1:2000

103 H/2W	SURF INLET		
Drawn by: ACF	Traced by: FJF	DDH 81-6	
Revised by: SG, Date: Sept 86			
Scale: 0 5 10 m	Date: October, 1981	Plate: 31	

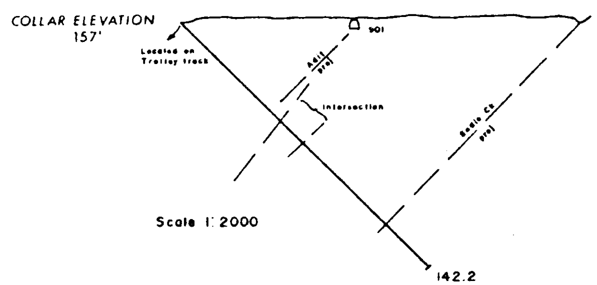
W

Elevation 48m
Bearing 090°
Angle -45°



DDH81-7

LAB NO.	DEPTH (ft)	1981 ANALYSES Au (ppb)	Ag (ppm)	Cu (ppm)	1986 ANALYSES Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
	58.3- 58.6	40	< 0.4	24				
12507	58.6- 60.1	< 10	< 0.4	12	80	0.05	--	--
12508	60.1- 60.8	284	0.8	87	60	0.65	1	4
	60.8- 61.4	384	< 0.4	7	--	--	--	--
12510	61.4- 61.5	26,000	5.1	41	260	19.00	1	< 2
12511	61.5- 62.6	64	< 0.4	13	40	0.10	--	--
12512	62.6- 63.8	702	< 0.4	6	20	1.10	--	--
	63.8- 64.8	170	< 0.4	79	--	--	--	--
12514	64.8- 65.8	60	< 0.4	18	20	0.10	--	--
12515	65.8- 66.8	22	< 0.4	23	20	0.05	--	--
	66.8- 67.8	42	< 0.4	9				
	67.8- 72.8	< 10	< 0.4	14				
	97.1- 97.4	< 10	< 0.4	7				
	98.8- 98.9	< 10	< 0.4	407				
	121.7-122.3	< 10	< 0.4	81				
	126.8-127.2	< 10	< 0.4	34				
	127.4-128.4	22	< 0.4	45				
	128.4-129.7	64	< 0.4	83				

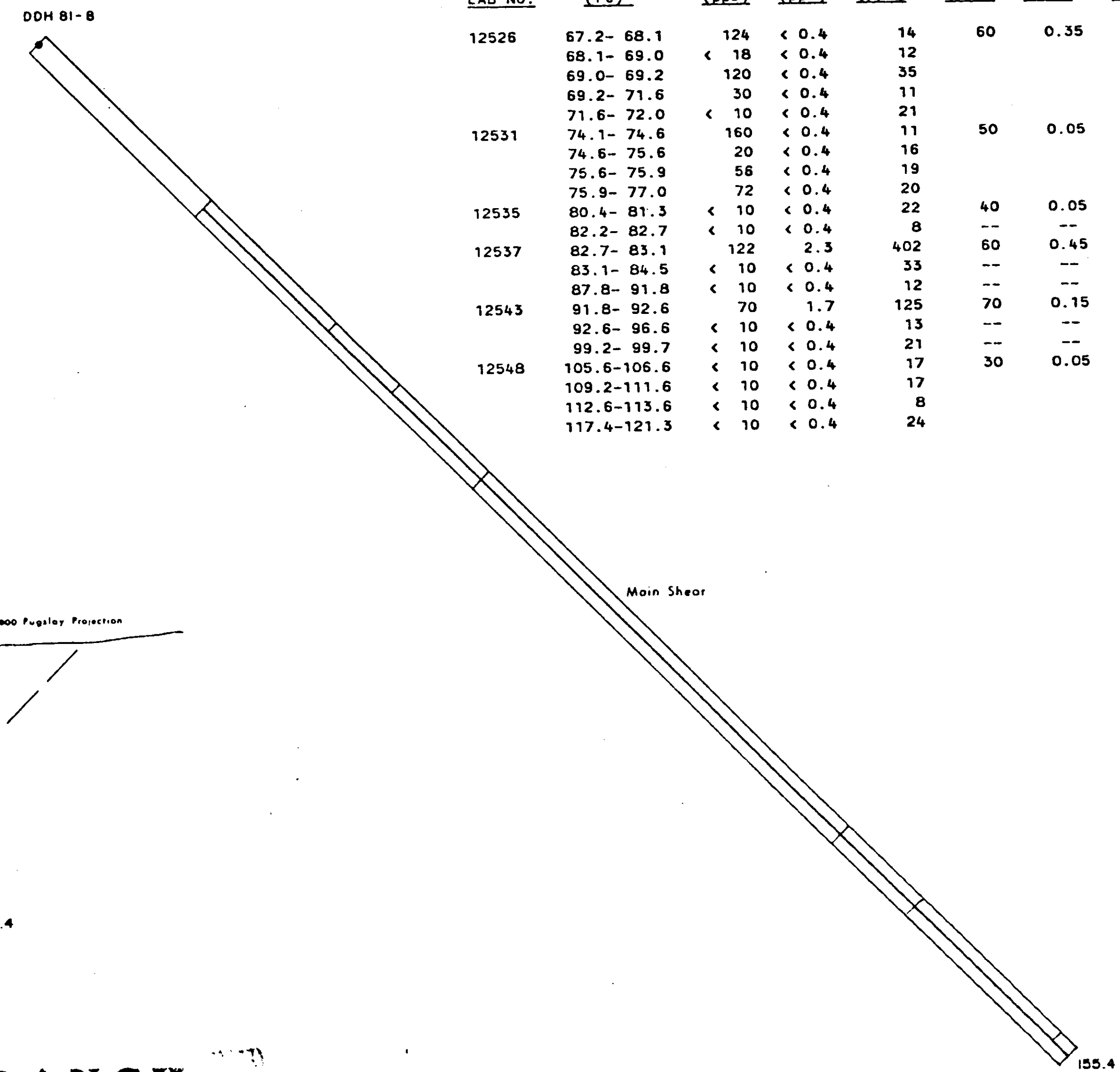


Scale 1:2000

103 H/2W	SURF INLET			
Drawn by: ACF	Traced by: FJF	DDH 81-7		
Revised by: SG Date: Sept 86				
Scale: 0 5 10 m		Date: October, 1981	Plate: 32	

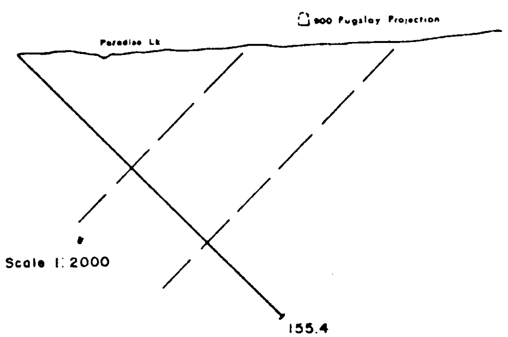
W

Elevation 38 m
Bearing 090°
Angle -45°



DDH81-8

LAB NO.	DEPTH (ft)	1981 ANALYSES Au (ppb)	Ag (ppm)	Cu (ppm)	1986 ANALYSES Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
12526	67.2- 68.1	124	< 0.4	14	60	0.35	6	14
	68.1- 69.0	< 18	< 0.4	12				
	69.0- 69.2	120	< 0.4	35				
	69.2- 71.6	30	< 0.4	11				
	71.6- 72.0	< 10	< 0.4	21				
12531	74.1- 74.6	160	< 0.4	11	50	0.05	--	--
	74.6- 75.6	20	< 0.4	16				
	75.6- 75.9	56	< 0.4	19				
	75.9- 77.0	72	< 0.4	20				
12535	80.4- 81.3	< 10	< 0.4	22	40	0.05	--	--
	82.2- 82.7	< 10	< 0.4	8	--	--	--	--
12537	82.7- 83.1	122	2.3	402	60	0.45	3	< 2
	83.1- 84.5	< 10	< 0.4	33	--	--	--	--
	87.8- 91.8	< 10	< 0.4	12	--	--	--	--
12543	91.8- 92.6	70	1.7	125	70	0.15	--	--
	92.6- 96.6	< 10	< 0.4	13	--	--	--	--
	99.2- 99.7	< 10	< 0.4	21	--	--	--	--
12548	105.6-106.6	< 10	< 0.4	17	30	0.05	--	--
	109.2-111.6	< 10	< 0.4	17				
	112.6-113.6	< 10	< 0.4	8				
	117.4-121.3	< 10	< 0.4	24				



Scale 1:2000

GEOLOGICAL BRANCH
ASSESSMENT REPORT

15,377

103 H/2W

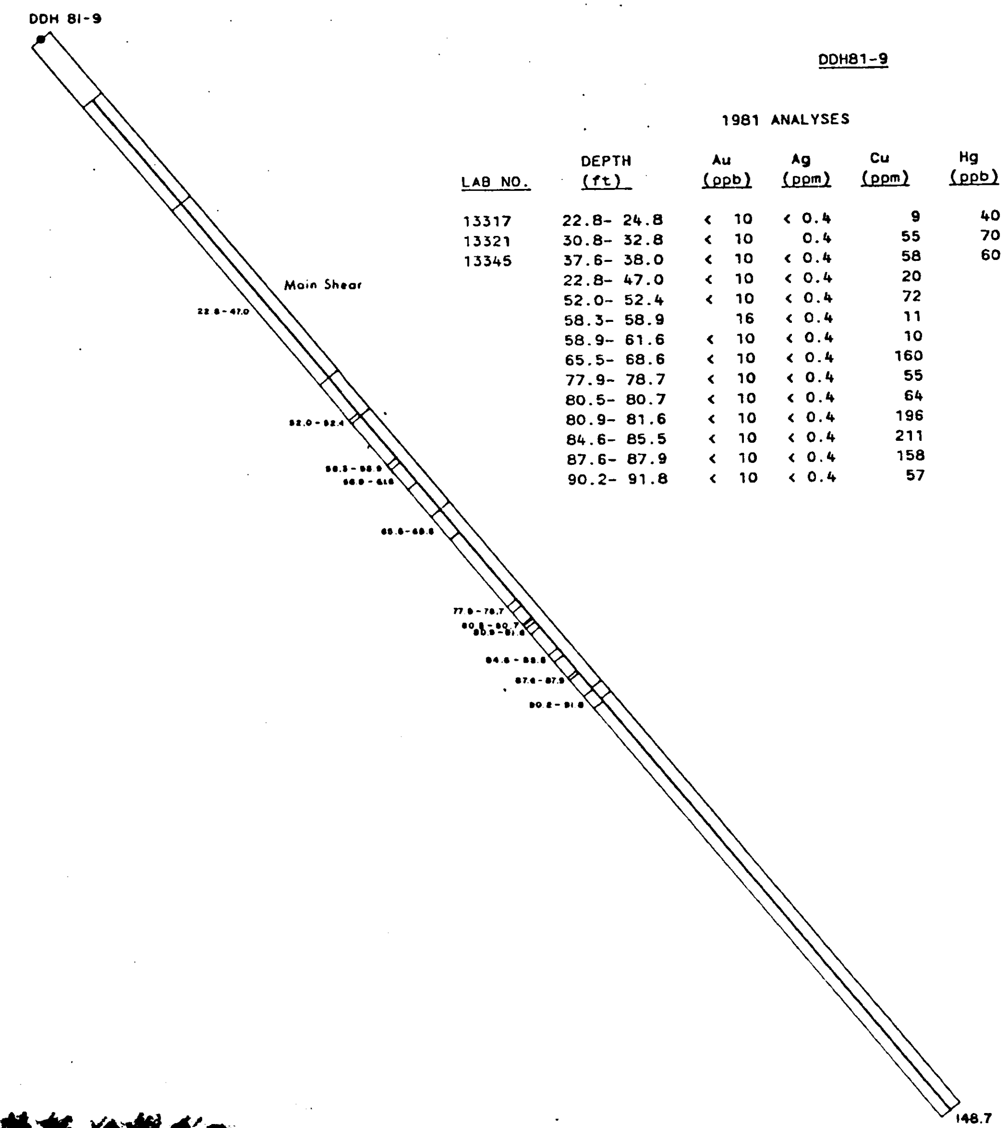
SURF INLET

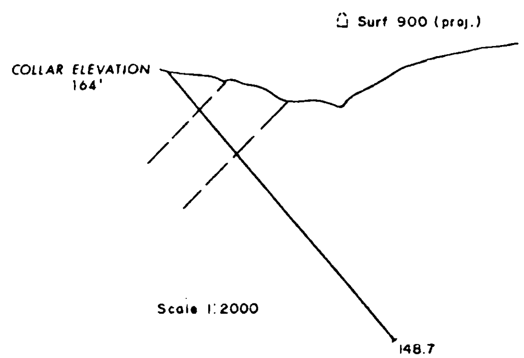
Drawn by: ACF | Traced by: FJF

Revised by: SG | Date: Sept 86

DDH 81 - 8

Scale: 0 5 10 m | Date: October, 1981 | Plate: 33





DDH81-9

LAB NO.	DEPTH (ft)	1981 ANALYSES Au (ppb)	Ag (ppm)	Cu (ppm)	1986 ANALYSES Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
13317	22.8- 24.8	< 10	< 0.4	9	40	< 0.05	--	--
13321	30.8- 32.8	< 10	0.4	55	70	0.05	--	--
13345	37.6- 38.0	< 10	< 0.4	58	60	0.10	--	--
	22.8- 47.0	< 10	< 0.4	20				
	52.0- 52.4	< 10	< 0.4	72				
	58.3- 58.9	16	< 0.4	11				
	58.9- 61.6	< 10	< 0.4	10				
	65.5- 68.6	< 10	< 0.4	160				
	77.9- 78.7	< 10	< 0.4	55				
	80.5- 80.7	< 10	< 0.4	64				
	80.9- 81.6	< 10	< 0.4	196				
	84.6- 85.5	< 10	< 0.4	211				
	87.6- 87.9	< 10	< 0.4	158				
	90.2- 91.8	< 10	< 0.4	57				

103 H/2W — SURF INLET

Drawn by: ACF — Traced by: FJF

Revised by: SG — Date: Sept 86

DDH 81-9

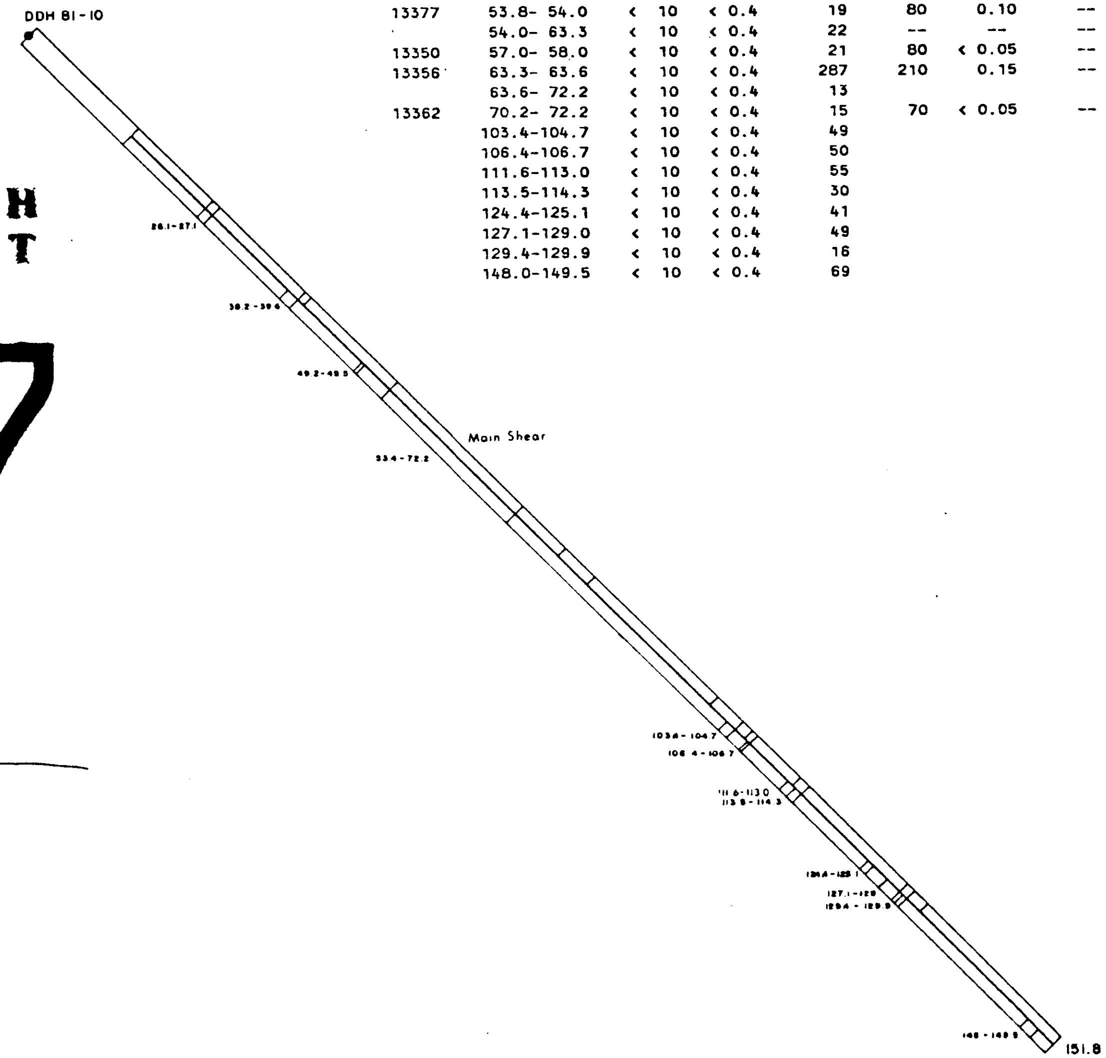
Scale: 0 5 10 m — Date: October, 1981 — Plate: 34

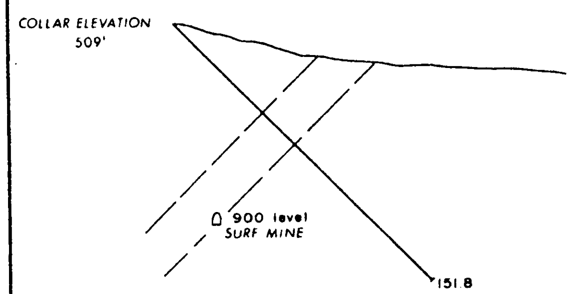
DDH81-10

W | E

LAB NO.	DEPTH (ft)	1981 ANALYSES Au (ppb)	Ag (ppm)	Cu (ppm)	1986 ANALYSES Hg (ppb)	Te (ppm)	Mo (ppm)	Pb (ppm)
	26.1- 27.1	< 10	< 0.4	65				
	38.2- 39.6	< 10	< 0.4	19				
	49.2- 49.5	< 10	< 0.4	6				
13346	53.4- 53.8	< 10	< 0.4	22	30	< 0.05	--	--
13377	53.8- 54.0	< 10	< 0.4	19	80	0.10	--	--
	54.0- 63.3	< 10	< 0.4	22	--	--	--	--
13350	57.0- 58.0	< 10	< 0.4	21	80	< 0.05	--	--
13356	63.3- 63.6	< 10	< 0.4	287	210	0.15	--	--
	63.6- 72.2	< 10	< 0.4	13				
13362	70.2- 72.2	< 10	< 0.4	15	70	< 0.05	--	--
	103.4-104.7	< 10	< 0.4	49				
	106.4-106.7	< 10	< 0.4	50				
	111.6-113.0	< 10	< 0.4	55				
	113.5-114.3	< 10	< 0.4	30				
	124.4-125.1	< 10	< 0.4	41				
	127.1-129.0	< 10	< 0.4	49				
	129.4-129.9	< 10	< 0.4	16				
	148.0-149.5	< 10	< 0.4	69				

Elevation 155 m
Bearing 090°
Angle - 45°





Scale 1:2000

103 H/2 W	SURF INLET
Drawn by ACF	Traced by FJF
SG Sept 86	
	DDH 81-10
Scale: 0 5 10 m	Date October, 1981
	Plate 35